

The SHORT WAVE Magazine

4/-

VOL. XXVI

OCTOBER, 1968

NUMBER 8

choose
KW SSB EQUIPMENT
for reliability

SEE THE LATEST EQUIPMENTS ON STAND 16

ROYAL HORTICULTURAL HALL—OCTOBER 2—OCTOBER 5



KW 2000A
SSB TRANSCIVER
180 watt PEP, 10-160
metres, complete
with AC psu, VOX,
P.T.T.

**KW VESPA
MARK II**
TRANSMITTER
For all HF Bands,
220 watts PEP SSB,
AM, CW.

KW 1000
LINEAR AMPLIFIER
1200 watts PEP with
built-in psu and SWR
indicator

KW 201
AMATEUR BANDS
COMMUNICA-
TIONS RECEIVER
SSB CW, and AM;
10-160 metres

KW
ELECTRONICS
LIMITED

Write for illustrated detailed specification on the above
and our list of KW Tested, "Trade-in" equipment

K. W. ELECTRONICS LTD.

1 HEATH STREET, DARTFORD, KENT

TELEPHONE: DARTFORD 25574

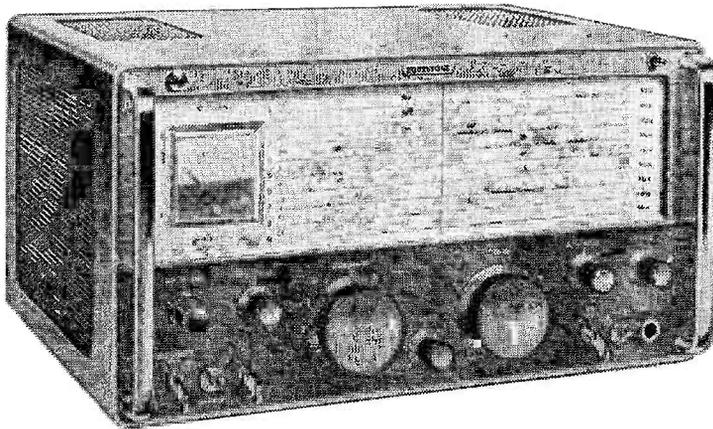
CABLES: KAYDUBLEW DARTFORD

Other KW Products: Antenna Switch (3 position) • E-Z Antenna Match Unit • PEP Meter • Match
SWR Indicator • Low-Pass Filters • Trap Dipoles • Balun • Dummy Load • Q Multipliers

Eddystone

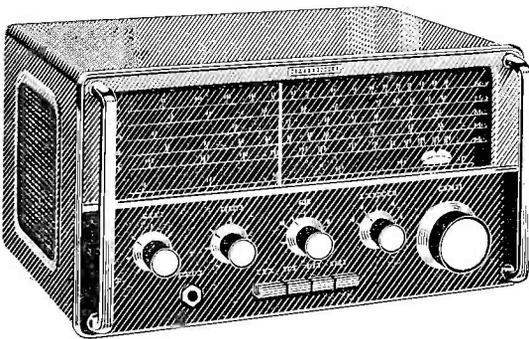


Amateur communications receivers



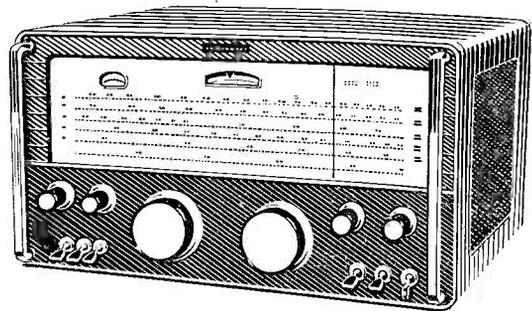
EA12 An amateur bands double-conversion superheterodyne receiver, for a.m., c.w., and s.s.b reception. For all amateur channels between 1.8 MHz and 30 MHz in nine 600 kHz bands with 28 MHz to 30 MHz in four bands.

Primary features. Crystal-controlled 1st oscillator, 2nd oscillator with continuously variable selectivity to 50 Hz, muting switched or by external relay, twin noise limiters, for a.m./c.w., and s.s.b, short-term drift better than 20 Hz and less than 100 Hz in any one hour, 'S' meter calibrated in nine levels of 6 dB and dB levels beyond 'S9', two a.g.c. time constants, deep slot filter, independent r.f., i.f., and audio gain controls with outputs for f.s.k and panoramic adaptor.



EC10 communications receiver

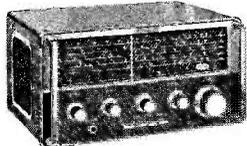
The fully transistorized EC10 communications receiver, supreme in its class, covers both medium-wave broadcasting and all shortwave service to 30 MHz. Incorporating the famous Eddystone tuning drive, with logging scale and auxiliary vernier, shortwave reception is particularly simple. Battery-operated or from optional a.c. mains unit.



940 H.F. communications receiver

An outstanding 13-valve receiver with two r.f. and two i.f. stages, silicon diode noise limiter circuit and high quality push-pull output. Built to a professional specification, facilities include provision for c.w., a.m., and s.s.b. reception over the range of 480 kHz to 30 MHz in five bands. Suitable for 110/125 V and 200/250 V. 40-60 Hz a.c. mains.

Comprehensive information from your Eddystone distributor or: Eddystone Radio Limited, Eddystone Works, Alvechurch Road, Birmingham 31. Telephone: 021-475 2231. Telex: 33708



GEORGE FRANCIS G3T WV

FRANCIS for EDDYSTONE

EB35	£66 10 0
EB36	£57 0 0
EC10	£53 0 0
EA12	£195 0 0

All dials and accessories in stock.

FRANCIS for K.W. ELECTRONICS

KW2000A	£232 0 0
KW VESPA... ..	£138 0 0
KW201	£110 0 0

Full range of H.P. and L.P. Filters, Q-Multipliers, Dummy Loads, PEP Meters, EZ Match.

FRANCIS for SWAN

All Swan equipment available.

FRANCIS for TRIO

9J-59DE	£39 15 0
JR-500SE	£68 0 0
New Transceivers, Complete, no extras to purchase	£231 0 0

FRANCIS for LAFAYETTE

HA700	37 gns.
HA500	42 gns.

FRANCIS for PARKAIR ELECTRONICS

Skybandit	£23 10 0
Concorde	£17 15 0
Complete 2 metre Tx	£80 0 0

FRANCIS for JOYSTICK

Joystick Standard... ..	£4 15 0
Joystick De Luxe	£5 19 6
3A Tuner	£3 12 6
4 Tuner	£4 4 0

FRANCIS for SHURE

Shure 201	£5 0 0
Shure 444	£10 10 0

FRANCIS for AIWA

AR159. FM, AM, LW, SW1, SW2, MB	36 gns.
AR158. FM, VHF1, VHF2, SW; AM, MB, up to 174 Mc/s.	36 gns.

FRANCIS for GRUNDIG

Yacht Boy. Covers 20, 40, 80, 160. All models in stock	36½ gns.
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FRANCIS for MICROPHONES

Acos Mic. 40	19 11
Acos Mic. 45	19 6
PIEZO DX73	1 10 0
Planet CM70	1 10 0
Foster MDF902	10 gns.
Hand Mic.	15 0
MS11	£2 5 0
Lapel Mics.	5 0
Cosmocord 39-1	£1 9 0
Cosmocord Mic 60	19 11

We have a large stock of microphones.

FRANCIS for ODDS and ENDS

3-pin Din Plugs and Sockets; 5-pin Din Plugs and Sockets; 2-pin Din Plugs and Sockets. Jack Plugs, chrome, 2/3; Jack Plugs, bakelite, 2/-; 2.5 mm., 3.5 mm. Plugs and Sockets. Fuses-Chassis, Cables, Tuning Condensers, Transformers, Controls, Knobs, Valve bases, Switches, Neons, Resistors, Phone Plugs, Sockets, Speakers, Headphones, 13/9. Stereo, 68/9. Solder Irons, Solder. Our stocks are large.

Send for Lists. S.A.E. please.

SPECIAL OFFERS

Hook-up Wire. 100ft. for	2 0
Magnetic Counters	6 0
100 High Stabs	5 0
50 Condensers. Silver mica	1 6
300 + 100 + 100 + 16 mfd. 300 volt	5 0
400 + 200 + 50 + 16 md 300 volt	5 0

All spares BRAND NEW and not ex-Government.

FRANCIS for INTERCOMS

2-way. All complete	£2 15 0
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FRANCIS for CABLES

75 ohm. Ordinary, 7d. yd.; 75 ohm Low Loss, 1/10 yd.; 52 ohm Ordinary, 1/4 yd.; 52 ohm Low Loss, 2/3 yd.; 75 ohm Twin, 6d. yd.; 300 ohm Ribbon, 6d. yd.; Egg Insulators, 6d. each; PL259 Plugs, 4/9; PL259 Sockets, 4/9.

FRANCIS for CONDENSERS

We have a very large selection. Your enquiries please.

FRANCIS for TEST GEAR

Handy little Tester. 1000/ohm per unit. Only	1 19 6
Audio Generator, TE22	£15 0 0
RF Generator, TE20	£12 10 0

We hold a large stock of small and large Panel Meters. Send for lists.

FRANCIS for TRANSISTORS and VALVES

OC44, OC45, OC71, OC72, 2/11 each; OC81, 2/3; OC83, 2/2; OC170, 3/-; OC171, 4/-; OC26, 7/6; AC126, AC127, AC128, 2/7; AF114, 4/-; AF116, AF117, 2/6; BSY26, BSY28, BSY65, BSY95A, BFY18, 3/-; OC75, 2/6; 2N706, 2/-; GET880, 6/5; BC152, 15/-; AC176, 11/-; 578MP Silicon 800PIV, 750MA/S, 2/5 each; over 7,000 sold already. OA81, 1/6; OA202, 1/10; ISJ150, 3/9; BY126, 3/9; 6HF5, 39/-; 614B, 52/6. All valves in stock for Swan and KWV.

SECOND-HAND GEAR

KW Viceroy. Perfect	£87 10 0
Panda Cub	£25 0 0
Digital Clock	£17 0 0
Lafayette HA500	£32 0 0

No order too small. Goods dispatched by return. 6d. stamp for catalogue and lists.

Part Exchanges. Postage Extra.

93 Balderton Gate, Newark, Notts.

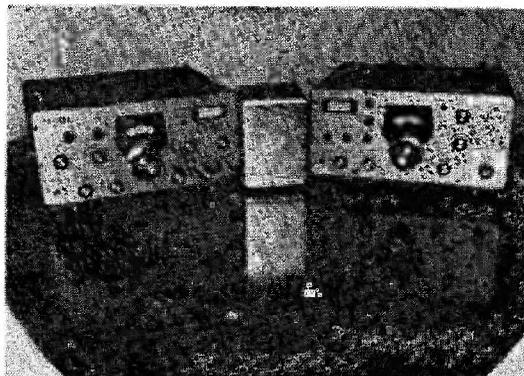
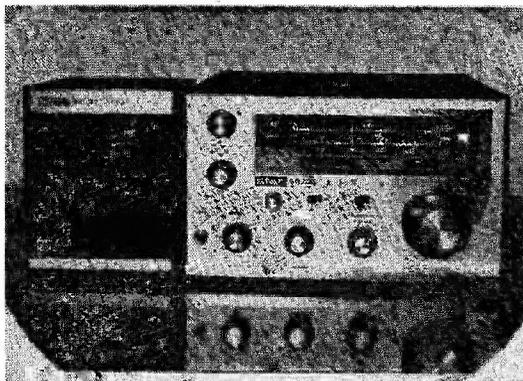
Tel. 4733; after 6 p.m. 2578

★ **BARGAIN OF THE MONTH** ★
EDDYSTONE 830/7
 Complete with leads, speaker manuals, speaker 1 year old—indistinguishable from new
 Cost £275
A Bargain at £190

J. B. LOWE

50-52 Wellington Street, Matlock, Derbyshire

Tel.: Matlock 2817 (2430 evenings)



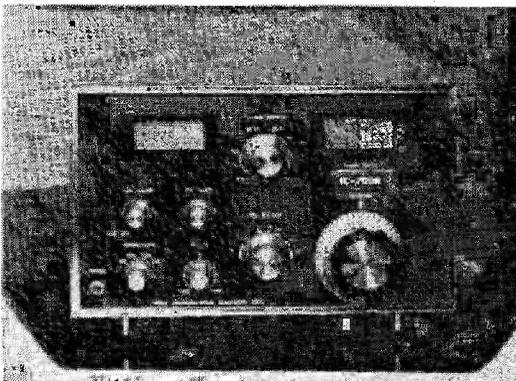
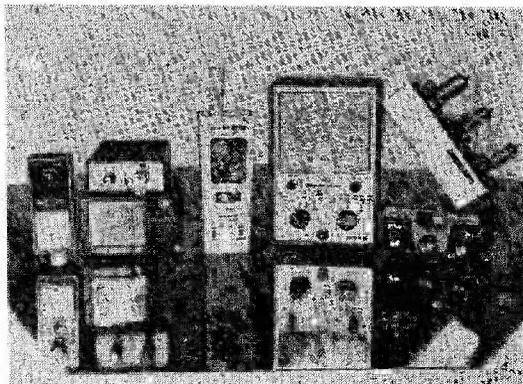
Show time here again—as I write this it's still a long way off, but I had better start getting ready. No matter what I do, though, there'll be the last minute panic—"You packed it, didn't you?" "No, I thought you did." Happens every time. Ah well, the smiling, happy, easy-going Bill you see on the opening day bears little resemblance to the purple snarling hair-tearing Bill of the day before. Mind you, if you got stuck into the Royal Horticultural New Hall bar like me, you'd be smiling, happy and easy-going too. Anyway, you'll see my load of stuff and I think you'll like it. You'll get a chance to compare it price for price with what else is available. This I like—does my pocket a power of good!

I suppose I'll have to answer the usual daft questions—"My AR88 has a slight hiss when I switch the BFO on, what do you think is wrong with it?" "Nothing, sir, it has probably just taken a dislike to you." "I am next door to a teletype station and his frequency is the same as my I.F. Is there a mod. I can do so I don't hear him?" "Yes, sir, disconnect the loudspeaker." Any daft questions, chuck 'em at Alan Whitford, G3MME. He's the better looking one and has the patience of Job. I'm not too bad (the little fat one with glasses), but Mike Crowther-Watson, G3IAR, the bearded oaf, is likely to say "Don't be a Very Rude Word." I might just add at this point—don't take this drivel too seriously! Don't know whether John will be around—depends on how busy the Service Dept., is, but if he isn't and you want to delve into technicalities and niceties of design, Alan can hold his own with the best. Don't ask me—I'm stupid.

Anyway, Stand 18 will encircle as fine a bunch of Yobbos as you'll meet—all of us snatching the folding stuff off you as fast as our hot greedy hands can move. You will see all the stuff I advertise—Sommerkamp, Star and Inoue in all their glory, keyers, CW monitors, converters, speech compressors, VTVM's, GDO's, SWR bridges, headsets, microphones, sundry bits and pieces and so on. I will also find room somehow for some nice second-hand stuff, small parts etc. In addition, said he, somewhat furtively, I shall have a surprise job—don't want to let the cat out of the bag, but it's a neat 80-10 transceiver with all the gubbins sporting a pair of 6146B's at a price which will cause many of you to dive for your wallets on the spot. Anyway—don't believe me, come along and see for yourselves on Stand 18. If you can't make the Show, you can of course, see it all at Matlock, or for those of you in the Deep South, honey chile, try Alan Whitford G3MME at 37, Chestnut Drive, Polegate, Sussex (just outside Eastbourne) Polegate 4659—he has a goodly load of my best stuff and is just as anxious to get your money as I am.

73.

The Bandit.



Amateur Electronics G3FIK

TRIO TS-500 TRANSCIVER. We sincerely hope that we do not sound presumptuous but the prospective purchaser of a TS-500 cannot afford to ignore the home QTH demonstration service which we are offering with this equipment. To the best of our knowledge we are the only people offering this facility and **G3WQR** is fully committed in conducting this service and can provide a without-obligation demonstration at your QTH at very short notice. The TS-500 has no competitor on the U.K. market and is truly excellent value for money for a full specification Transceiver which lacks nothing in construction, appearance and performance. Fully illustrated details by return post of course.

TRIO 9R-59DE. Small stocks remaining at the old price of ... 35 gns.
TRIO JR-500SE. Superb Ham-band only performance ... £68 0 0
KW VICEROY SSB TRANSMITTER. Latest model in unmarked condition ... £105 0 0
COLLINS 75-A1. In most excellent mechanical and electrical order. ... £75 0 0

BC221-AK FREQUENCY METER. The very rare model with modulation. In absolutely brand new condition and with spare valves. Carriage paid. ... £30 0 0

LAFAYETTE HA-700 RECEIVER. 150 Kc/s. to 30 Mc/s. New in June. Carriage paid ... £34 0 0

DX-100's by HEATHKIT. A selection from ... £45 0 0

CR100 RECEIVER. Specimen model indistinguishable from new. Carriage paid ... £28 0 0

EDDYSTONE 680. Fully reconditioned including cabinet. Carriage paid. ... £45 0 0

EDDYSTONE 750. Excellent appearance and performance ... £35 0 0

PANDA PR-120V. 120 watts 80 thru 10. Callers only ... £37 10 0

PANDA CUB. Excellent order. Callers only ... £22 10 0

AVO CT38 ELECTRONIC TESTMETERS. Mint condition. Collected ... £16 0 0

SOMMERKAMP FR-100B. Brand new. This is in original packing and has never been used. Carriage paid ... £95 0 0

HAMLOAD DUMMY LOAD. Continuous 100 watts rating. Belling Lee coaxial terminations. 75 ohm impedance. 50 ohm to order. This is an oil-filled in operation device supplied dry with simple and inexpensive filling instructions. Carriage paid ... £3 3 0

TTC SWR BRIDGE (with inbuilt field strength meter) 50 ohm ... £4 9 6

TTC C3005 SWR BRIDGE. This employs two meters giving simultaneous readings of forward and reflected power. 50 ohm ... £6 6 0

8A ALU FILTER UNITS. Carriage paid ... £12 6 0

HRO SENIOR (Octal valves). Mint condition and complete with 10 general coverage coils. Carriage paid ... £30 0 0

AR88D RECEIVERS. Stocks as per our previous advertisements or full details upon application.

Part exchanges. Credit facilities.

Adequate S.A.E.'s please gentlemen.

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 Telephone: 021-327 1497

DERWENT RADIO S.A.E. LISTS

KW, SOMMERKAMP, EDDYSTONE, HALLICRAFTERS, CODAR, LAFAYETTE, TRIO, SHURE, TW, HEATHKIT, JOYSTICK, STAR and many others

KW 1000 Linear Amp. ...	£135	Trio 9R59DE Receiver ...	£39
Star SR 700A Receiver ...	£115	Trio Matching Speaker ...	82/1
Star ST 700 Transmitter... ..	£135	Hansen SWR Bridge ...	70/1
Star SR 200 Receiver ...	£40	DM 501 Microphone ...	35/-
Lafayette HA 350 ...	£68	DM 307 Microphone ...	88/-
Lafayette HA 500 ...	£44	Cosmocord 39/1 ...	32/6
Neve Pal d.f. Receiver ...	£27	Acos 45 Microphone ...	19/6
KY 102 Bug Key ...	£4	Belling hi pass filter ...	18/6
Shure 201 Microphone ...	£5	Fanon 28.5 mc. Walkie	
Eagle SWR Bridge... ..	£9 19	Talkies £12 10 pair or £6 10 each	
Eagle RF 40... ..	£3 5	Low Z Padded Headsets 42/6	
Eagle RF 45... ..	£2 8	Copal Digital Clock ...	£12 7
Halsion 160m. Mobile Whip	£6 17	Garex 2m. Transmitter Kit	£11 5
Halsion extra Coils each	£3 17	Garex 2m. Converter ...	£9 18
G Whips. Helical wound		Codar ATS ...	£16 10
160m. Ranger ...	£7 19	Codar T28 ...	£15 10
Tribander 10/15/20 ...	£8 16	Codar 250/S ...	£8
S.A.E. for leaflet		Codar 12/MS ...	£11 5
DA-1 Electronic Keyer ...	£18	Codar 12/RC ...	£2 7
Eddystone EC10 ...	£64	TE18 mains gdo ...	£11 10
Eddystone EA12 ...	£195	TE15 battery gdo ...	£11 10
Eddystone EA14 ...	£143	Katsumi elbuge ...	£7 15
Sommerkamp FR 500 ...	£130	Katsumi compressor ...	£7 15
Sommerkamp FL 500 ...	£145	KW 2000A ...	£232
Trio TS 500 and A.C. p.s.u.	£203	Lafayette HA700 ...	£37

ALL GAREX P.S.U. KITS IN STOCK ALSO YUKAN SPRAY PAINTS. STELLA INSTRUMENT CASES

We would like to hear about your trade-in items large or small.

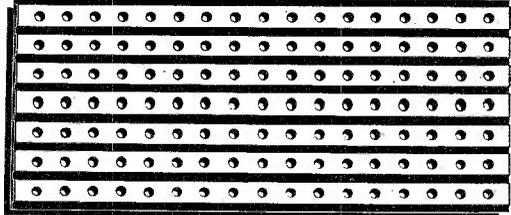
Second-hand Equipment

Heathkit DX 40 ...	£15	National NC183D... ..	£65
Hallicrafters HT 40 ...	£15	CR 100 ...	£14
Hallicrafters HA 5 vto ...	£16	Guthman Rx, S meter ...	£4
Green & Davis LA 600 ...	£25	Hartley d/beam scope ...	£20
Marconi BFO up to 40 kc/s.	£20	Army 88 set, etc. ...	30/-
Star SR 350 ...	£38	28.5 Walkie Talkies. De-	
Eddystone EC10 ...	£42	luxe. Each... ..	£9
Eagle RX80 ...	£26	KW Viceroy III ...	£95
Heathkit RG I ...	£27	Codar CR70A ...	£14
Heathkit RA I ...	£30	DA-1 electronic key ...	£14
HRO's, p.s.u., coils from	£18	Panda PR 120v. ...	£35
Rotatable Guy Rings ...	10/-	G2DAF ssb TX ...	£35
Heathkit DX 100... ..	£40	G2DAF RX ...	£35
Heathkit SB 10U ...	£25	WANTED: EC10's, EA12's, 940's,	
Heathkit 160 twt ...	£11	888A, HA-350's, etc.	
Hallicrafters SX100 ...	£85		

Please add extra for carriage.

28 HILLCREST AVENUE, SCARBOROUGH, YORKSHIRE

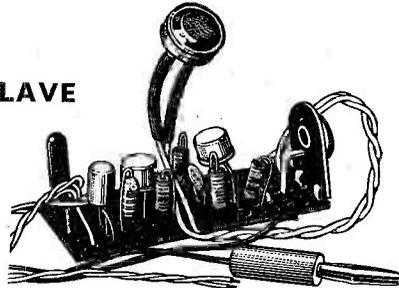
FREE inside PRACTICAL ELECTRONICS



PRINTED WIRING BOARD

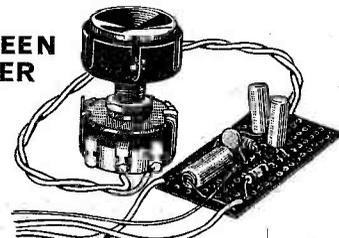
on which to build a wide range of electronic equipment. Plus full instructions for these two wiring board projects.

LIGHT SLAVE



A light-operated mains switch turning on 1 kW electrical appliances automatically at dusk. Controls loads of up to 5A from a pre-set ambient light intensity.

WINDSCREEN VARI-WIPER

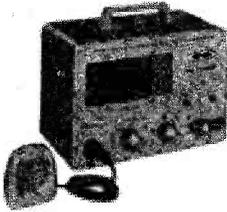


A thyristor controlled device, adjusting to clear car windcreens efficiently at whatever pre-determined time interval is required.

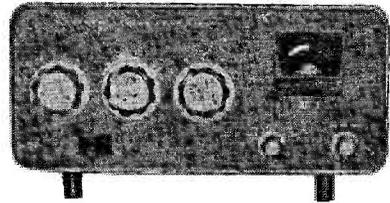
GET YOURS IN THE OCTOBER ISSUE OUT NOW 3/-

HEATHKIT Amateur Radio Equipment

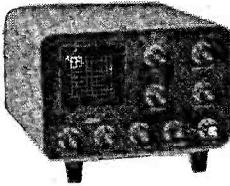
DEFERRED CREDIT TERMS BY ARRANGEMENT (OVER £10 U.K. ONLY)



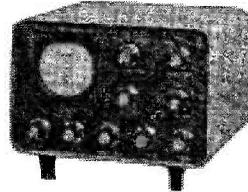
HW-30 2 Metre Transceiver . . . For fixed, portable, or mobile. Ideal for local and RAEN purposes. Input 5 watt. C.C. Tunable regenerative RX. Size 9 $\frac{3}{4}$ "w. x 8"h. x 6" deep. (For 230v. operation if required).
Kit K/HW-30, 6 $\frac{1}{2}$ lbs., £26. 8. 0. P.P. 6/-.
 Ready to use **A/HW-30**, £36. 8. 0. P.P. 6/-.
Kit GP-11 (Power Supply 6 or 12v. D.C.) £10. 13. 0.
 Ready to use £13. 13. 0. P.P. 4/6.



SB-200 KW SSB linear Amplifier . . . 1200 watts PEP input SSB, 1000 watts CW on 80 through 10 metres. Built-in antenna relay, SWR meter, and power supply. Can be driven by most popular SSB transmitters (100 watts nominal output).
Kit K/SB-200, 41 lbs., £120. 18. 0. P.P. 10/6.
 Ready to use **A/SB-200**, £145. 18. 0. P.P. 10/6.



SB-610E Signal Monitor Scope . . . operates with transmitters on 160 through 6 metres at power levels from 15 watts through 1 kw, shows transmitted envelope. Operates with receiver IF's up to 6 Mc/s., showing received signal waveforms. Spots over-modulation, etc.
Kit K/SB-610E, 14 lbs. £41. 14. 0. P.P. 10/6.
 Ready to use **A/SB-610E**, £51. 14. 0. P.P. 10/6.



SB-620 "SCANALYZER" Radio Spectrum Monitor and Analyzer. New narrow sweep widths with crystal filter for single channel analysis. 10 Kc/s., 50 Kc/s. Variable width to 500 Kc/s. Styled as SB series.
Kit K/SB-620, £64. 14. 0. P.P. 10/6.
 Ready to use **A/SB-620**, £77. 4. 0. P.P. 10/6.



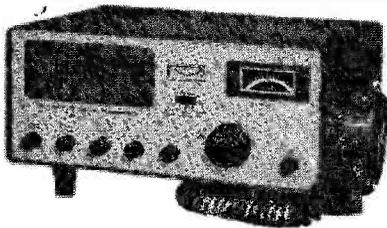
DX-100U Transmitter . . . 120 watts CW, 100 watts Phone. Built-in VFO and all power supplies. Band coverage: 160, 80, 40, 20, 15 and 10 metres.
Kit K/DX-100U, £95. 0. 0. P.P. 19/6.
 Ready to use **A/DX-100U**, £120. 0. 0. P.P. 19/6.

MODELS
HW-12A
 (80m.)

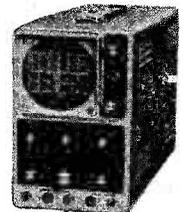


HW-32A
 (20m.)

HW-12A and HW-32A Filter-Type SSB Transceivers . . . 100 watts PEP input TX. 1 μ v sensitivity RX. PC Board. Pre-aligned circuits. Power required: 800v. D.C. at 250 mA., 250v. D.C. at 100 mA. —125v. D.C. at 5 mA., 12v. A.C. or D.C. at 3-75A.
Kit, either model, £60. 3. 0. P.P. 10/6.
 Ready to use £74. 13. 0. P.P. 10/6.
GH-12 Push Talk Microphone. Ready to use £4. 3. 0.



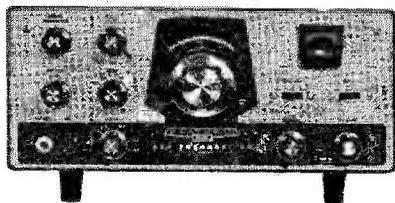
HW-17 2 Metre Transceiver . . . For local ragchewing. NETS DX. Solid state circuitry. Built-in speaker PTT and gimlock mount included.
Kit HW-17, £69. 2. 0. D.C. supply **HWA-17-I** £13. 19. 0.



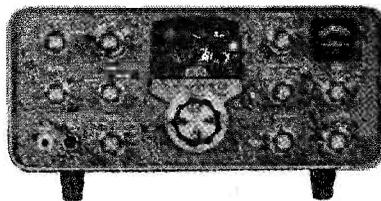
A complete line of test instruments for the Amateur Radio Station. The V-7A VFM and RF probe. The MM-1U Multi-meter. The OS-2 Portable Oscilloscope and many more instruments are fully described in the latest Heathkit catalogue.

HEATHKIT Amateur Radio Equipment

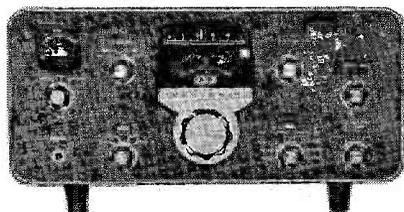
LOWEST POSSIBLE INTEREST RATES TO ASSIST OWNERSHIP OF HEATHKIT MODELS



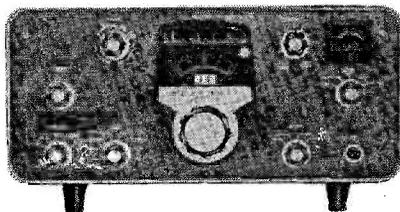
HW-100 5 Band SSB-CW Transceiver . . . Solid-state FET VFO. Covers 80-10 metre bands. Switch selector USB, LSB or CW. 180 watts input PEP SSB—170 watts input CW. Crystal filter.
 Kit K/HW-100, 18 lbs. £125.0.0. P.P. 9/-.
 Ready to use A/HW-100, £165.0.0. P.P. 9/-.



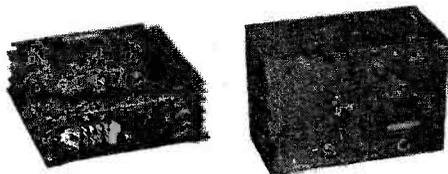
SB-101 80 Through 10 Metre SSB Transceiver . . . 180 watts PEP SSB, 170 watts CW (the practical power lever for fixed/mobile operation). Features USB/LSB on all bands, PTT & VOX. CW sidetone and more. Unmatched engineering and design.
 Kit K/SB-101, 23 lbs., £185.12.0. P.P. 9/-.
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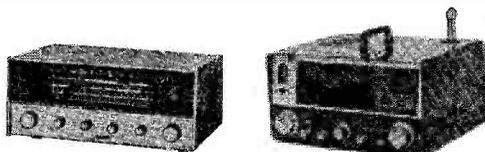
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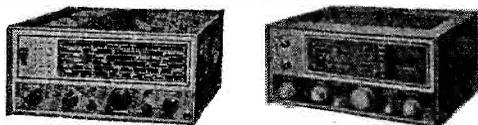


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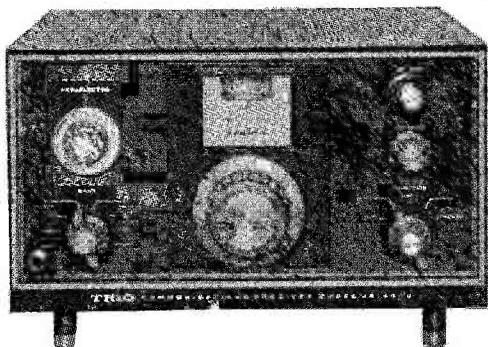
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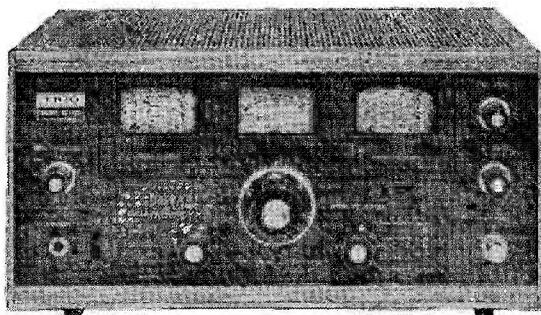
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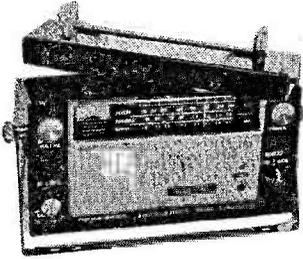
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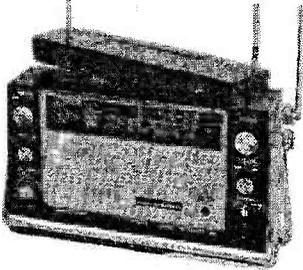
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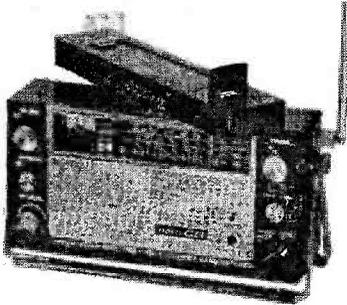
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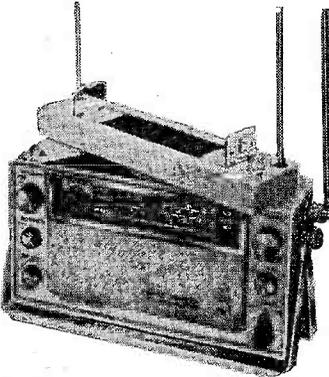
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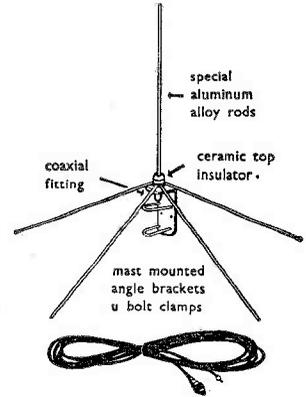
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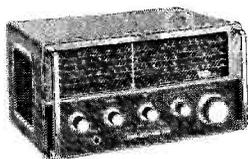
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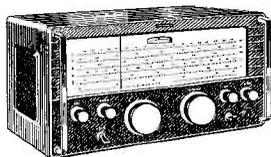
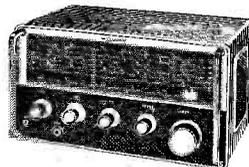


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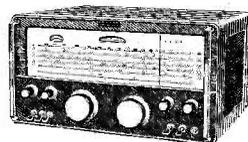


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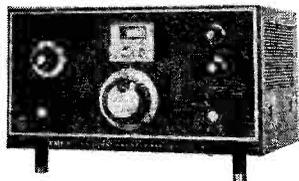
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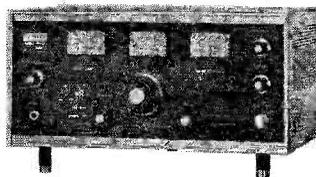


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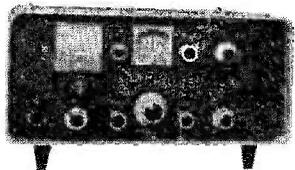
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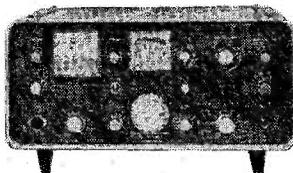


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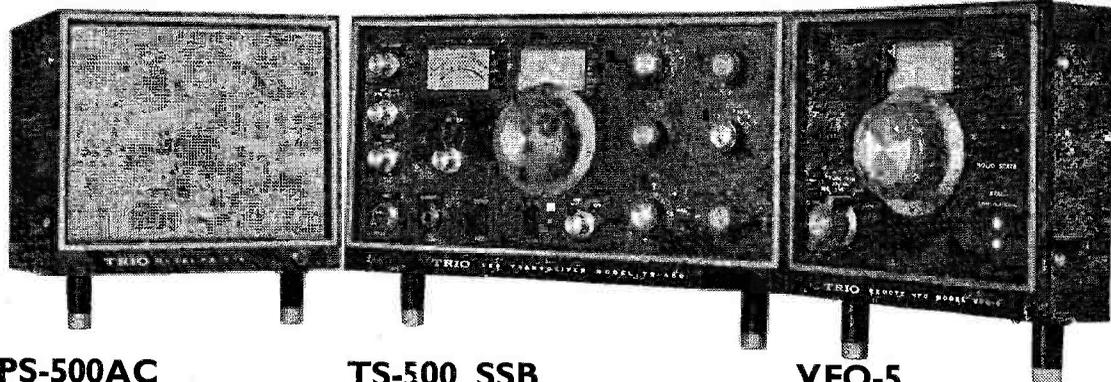
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● Precision, double gear tuning mechanism and linear tuning condenser provides 1kHz direct reading divisions on all bands ● Besides SSB, AM (A3H) and CW communication is provided ● Operates with a max. input of 200W. PEP on SSB and CW. ● Undistorted output more than 1W. ● Covers all amateur bands from 3.5 to 29.7 MHz with a 7 band tuning system in both transmitting and receiving modes ● Double conversion type superheterodyne receiver ● Solid state VFO circuitry assures high stability performance ● Receiver sensitivity 1µV S/N 10 dB (14 MHz), Selectivity 2.7 kHz (-6 dB) 5.0 kHz (-55 dB) ● Xmitter audio freq. 300-3000 Hz (-6 dB) ● Uses 17 valves, 3 transistors and 15 diodes ● New Trio developed crystal sideband filter provides superior shape factor and clear, crisp SSB quality ● Highly effective AGC circuit prevents fading, permits easy reading of signals ● Built-in crystal calibrator circuit works with 500 kHz, 1 or 3.5 MHz crystals ● RIT circuit for fine receiver tuning ● Built-in circuits include VOX, PTT, ALC, RIT, CAL, RF-HV METER, connections for ext. VFO and ALC. ● Used with a remote VFO a special switching circuit permits, in effect, the operation of two transmitter/receivers. ● Power supply from sep. PS-500AC unit ● Size 13 x 8¾ x 11¾in.

VFO-5 VARIABLE FREQUENCY OSCILLATOR

● Equipped with the same high precision double gear dial mechanism and linear variable frequency capacitor as the TS-500, enabling direct reading of frequencies at 1 kHz intervals ● Oscillator frequency range covers all the amateur bands, as the TS-500 ● Built-in crystal oscillator section assures crystal controlled transmitting/receiving ● Unlike ordinary VFO units, this VFO permits four different functions through the utilisation of a "criss-cross" function switching scheme ● Outstanding frequency stability due to cool operating all transistor circuitry, adoption of a Vaccar oscillator circuit and temperature compensation features ● Rugged LC box and solid construction throughout make this unit practically impervious to mechanical shocks. ● All power requirements are taken from the transceiver through a single connecting cable ● Uses 4 transistors and 2 diodes ● Size 7½ x 8¾ x 6in.

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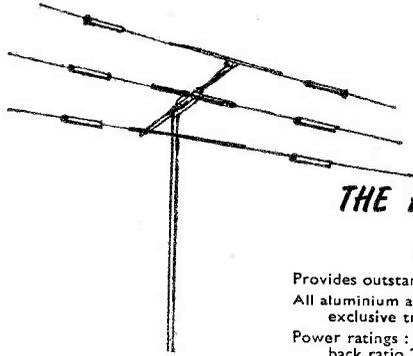
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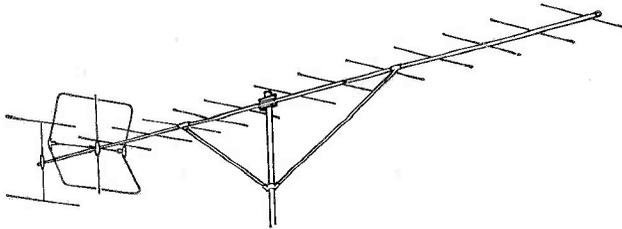
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For the past few years we have been able to maintain prices throughout the range of our Amateur Aerials, apart from one or two slight changes. In this length of time however, we have had to sustain a number of cost rises in our raw materials, which we have been able to partially off set by greater manufacturing efficiency.

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Aerials Band	Cat. No.	Description	dB Gain over Dipole	Current Price
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4 Metre	4/3Y	3 Element folded dipole yagi with 1 1/4" boom	5.7	2 17 6
	4/4Y	4 Element folded dipole yagi with 1 1/4" boom	7.0	3 18 0
	4/6Y	6 Element folded dipole yagi with 1 1/4"/2" boom	8.7	8 14 6
	4/8Y	8 Element folded dipole yagi with 1 1/4"/2" boom	10.0	12 13 0
	4/10Y	10 Element folded dipole yagi with 1 1/4"/2" boom	11.2	17 8 0
	PM4	Coaxial harness to match and phase two 4m. aerials		1 13 0
2 Metre	2/4Y	4 Element folded dipole yagi with 1" dia. boom	7.0	1 18 0
	2/6Y	6 Element folded dipole yagi with 1" dia. boom	8.7	2 8 6
	2/8Y	8 Element folded dipole yagi with 1" dia. boom	10.0	3 0 6
	2/10Y	10 Element "Long Yagi" with 1 1/4" boom and braces	13.2	7 2 0
	2/14P	14 Element "Parabeam" with 1 1/4" boom and braces	15.5	11 11 0
	2/8	Double 4 slot fed yagis with 1" dia. booms	10.0	3 17 0
	2/12	Double 6 slot fed yagis with 1" dia. booms	11.7	5 4 6
	2/16	Double 8 slot fed yagis with 1" dia. booms	12.6	6 12 0
	2/HO	"Halo" mobile aerial, head only		16 6
	2/HM	"Halo" mobile aerial with 1/2" dia. mast		1 1 6
	PM2	Coaxial harness to match and phase two 2M aerials		1 1 6
	70 Cm.	70/16	Double 8 slot fed yagis with 3/4" dia. booms	12.6
70/14Y		14 Element folded dipole yagi, multi reflector	16.0	5 2 6
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E D I T O R I A L

Exhibition *As remarked before in this space, the annual Amateur Radio show—to take place next week, called the International Radio Engineering & Communications Exhibition, at the Royal Horticultural New Hall, Greycoat Street, Westminster, London, S.W.1, October 2-5 inclusive—is not only an important event for those who want to see the latest in amateur band equipment and accessories. It is also a great convention occasion, in the sense that many people go to the Amateur Radio Exhibition to meet their friends, and to see and be seen. This year will be no exception.*

We shall be at our usual corner Stand—manned throughout the period of the Exhibition by members of our own organisation—and we also look forward to seeing our friends of many years, and to meeting new ones.

* * *

Difficulties *Because of the severe flooding in the area to the south of London about the middle of September—which caused considerable mail delays (coinciding with the advent of the new “first class post”!), also dislocation of the telephone service and general chaos—this issue of SHORT WAVE MAGAZINE was produced under considerable difficulties, particularly for our printers, as the work schedule was disrupted for several days.*

Though at the moment of writing it is not anticipated that publication will be unduly delayed, we hope that if it is readers will understand, and accept it as due to circumstances beyond our control.

*Austin Smith,
G6FO.*

ECONOMICAL FIVE-BAND LINEAR AMPLIFIER

USING TV-TYPE VALVES—LOW
OPERATING VOLTAGE—
MAXIMUM INPUT CAPABILITY
500 WATTS

P. FRIEND (G3SQR)

THE use of TV output valves in high-power linear amplifiers is now well established, the main advantage being a reduction in cost due to their being normal consumer-type valves working at lower voltages. This particular design was evolved after a near-fatal encounter with the 2.5 kV HT supply for an 813 linear amplifier!

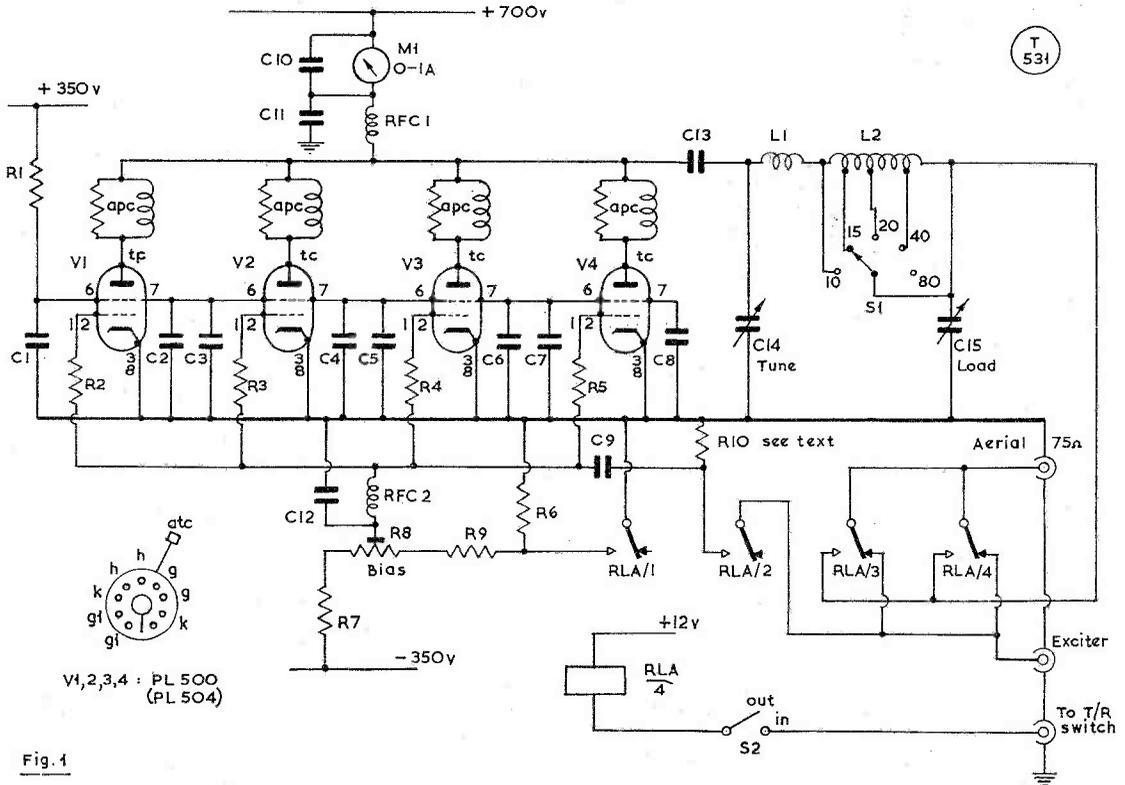
A passive-grid input system in a linear amplifier has two further advantages. First, it is generally unnecessary to neutralise the amplifier, provided good isolation between input and output circuits is maintained, so the circuit is more easily set up.

Secondly, the input impedance of the amplifier will be suitable for direct connection to the SSB exciter. The latter will be running near its design conditions, and it will be unnecessary to have a tuned L or *pi*-network at the amplifier input.

Safety aside, the main advantage of using low voltage valves is that capacitors are smaller and cheaper. In the PSU here, smoothing capacity is provided by relatively cheap TV electrolytic components. In the output network, standard broadcast capacitors can be used in place of special wide-spaced "transmitting variables," and all decoupling condensers for the anode and screen grid circuits are more readily available.

The Circuit

The amplifier to be described uses four PL500 valves in parallel, operating in Class-AB1. (These are interchangeable with the more modern PL504.) The anode supply gives 700 volts at 750 mA, for a maximum input of 525 watts. A *pi*-network couples the amplifier to a 75-ohm transmission line, although the reactance values are a little unusual, because of the low anode impedance of the four paralleled valves. It is in designing the *pi*-network that the chief drawback to arrangements of this type



V1,2,3,4 : PL 500
(PL 504)

Fig. 1

Fig. 1. Circuit of the G3SQR linear amplifier. The valves are PL500's, or PL504's - see text. Switch S2 brings in the amplifier by connecting the send-receive switch to the relay RLA/4. RFC2 is a standard Rx-type choke.

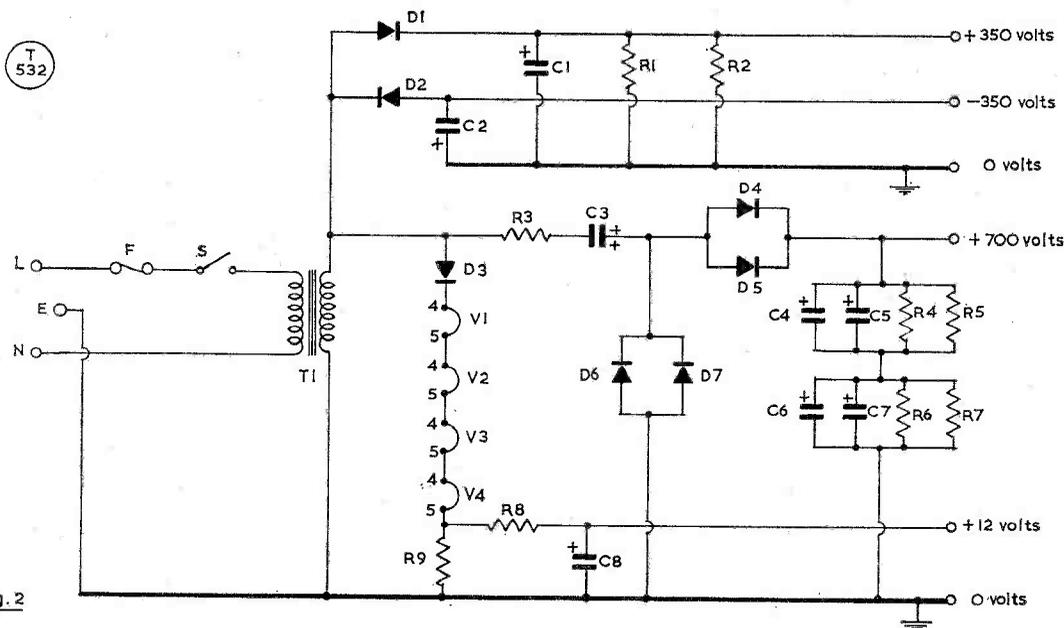


Fig. 2

Fig. 2. The power supply unit for the Economical Five-Band Linear Amplifier, by G3SQR. It is based on the highly-rated mains isolation transformer T1.

become apparent—the high output capacity of the valves necessitates having an undesirably high tank circuit Q on the HF bands. This causes high circulatory RF currents, and a consequent loss of efficiency.

Switching of the amplifier circuits is performed by RLA/4, a four-pole change-over relay with a 12 volt coil, made by Radiospares. Two sets of contacts are wired in parallel to handle the output switching, the remaining sets controlling the input and the fixed bias on the PL500's. When the relay is energised, the input socket is connected to the grids of the amplifier valves, and the output socket transfers power from the tank circuit to the aerial. Also the standing bias on the valve grids is reduced from -140 volts to the operating bias, which is such that the zero-signal anode current is 100 mA (about -65v). In the un-energised state the relay connects the input terminal directly to the aerial, allowing the station receiver to be connected to the aerial in the stand-by condition, so that

Table of Values

Fig. 1. Circuit of the Linear Amplifier

C1, C2,	R2, R3,
C3, C4,	R4, R5 = 10 ohms
C5, C6,	R6 = 27,000 ohms
C7, C8,	R7 = 15,000 ohms
C9 = .01 μ F	R8 = 2,000 ohms, var.
C10, C11,	R9 = 3,300 ohms
C12, C13 = .005 μ F	R10 = 133 ohms, 18w.
C14 = .001 μ F, var. see text	M1 = 1 amp meter
C15 = .002 μ F, var. see text	RFC1 = see text
R1 = 10,000 ohms, wire-wound	RFC2 = RF choke, 2 mH
	V1, V2,
	V3, V4 = PL500, or PL504

Table of Values

Fig. 2. The Power Supply section

C1 = 400 μ F, 450v.	R1, R2,
C2 = 100 μ F, 450v.	R4, R5,
C3, C4,	R6, R7 = 100,000 ohms,
C5, C6,	1-w.
C7 = 164 μ F, 450v.	R3 = 5 ohms, 1-w.
C8 = 100 μ F, 25v.	R8 = 270 ohms
F = Fuse, 3 amp.	R9 = 220 ohms, 20-w.
T1 = see text	D1-D7 = BY-100

the exciter can be run "barefoot." The connections to the relay coil are based on these requirements.

The amplifier passive grid network R10 consists of nine 1.2K 2-watt resistors in parallel, giving an effective 133 ohms, 18 watts. The voltage developed across these by the exciter is capacitively coupled to the PL500 grids, via 10-ohm grid "stoppers." (Stopping resistors were found to be unnecessary in the screen-grid circuit, although they may be needed in other cases.) The PL500 has two screen-grid connections on the base, and both are earthed through a 0.01 μ F capacitor. The screen supply yields 350 volts.

Anti-parasitic chokes, consisting of four turns of 18g. tinned copper wire on a 47-ohm 1-watt resistor, are connected directly to each of the four anode top-caps, and the RF choke is mounted vertically, at the centre of the valves. This choke, RFC1, is rather unconventional—it is in fact a 100-ohm 30-watt wirewound resistor (Radiospares), which performs admirably in spite of some loss of HT voltage across it. The anode coupling and decoupling capacitors are all "large brown moulded

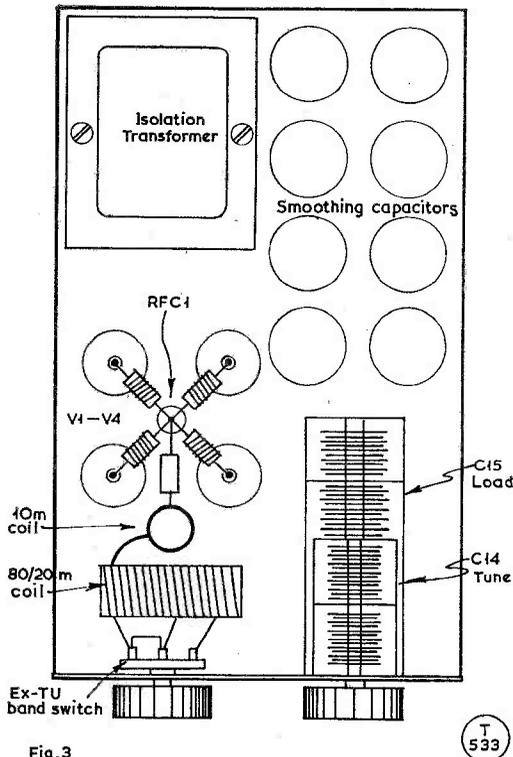


Fig. 3

Fig. 3. Layout adopted for the G3SQR Linear. The chassis is 10in. wide by 14in., with a panel 6in. high. The C/O relay is mounted under the chassis, below the loading capacity C15.

items" (from the junk box) and have a voltage rating of about 1,000 volts.

For the π -network good use is made of surplus components. The loading condenser C15 is the four-gang 4/500 $\mu\mu\text{F}$ item from a 19 Set, and the band-switch is a sturdy ceramic type from an old TU unit. The tuning capacitor C14 is a surplus two-gang 500 $\mu\mu\text{F}$ broadcast variable, and no trouble has been experienced with flash-over. Tank coil L1, L2 consists of two parts: The 10-metre section is separate, and mounted perpendicularly to the larger coil; it consists of 9 turns of 16g. tinned copper wound to 1in. internal diameter, with the turns spaced approximately one wire diameter. The remaining section has 10 turns of 18g. to 1 $\frac{1}{4}$ -in. i.d., again spaced one wire thickness. Details of the taps for each band are given with Fig. 1, p.472.

The Power Unit

The entire power unit is rather unconventional. The transformer is a 250-watt *Radiospares* isolation transformer, giving an output of 250 volts at 1 amp. A voltage-doubler produces the 700 volts for the anode supply, and half-wave rectifiers for the screen and control-grid supplies. BY-100 rectifiers are used throughout, but those in the main HT supply are operating very near their maximum ratings.

On its heater, the PL500 takes 27 volts at 300 mA. The four are wired in series and connected across the transformer secondary through a BY-100 rectifier and a 220-ohm, 20-watt resistor (a "mains dropper" salvaged from an old TV set). The diode serves to halve the r.m.s. mains voltage, effectively reducing it to 125 volts, thereby giving a simple and reasonably efficient heater supply.

Conclusions

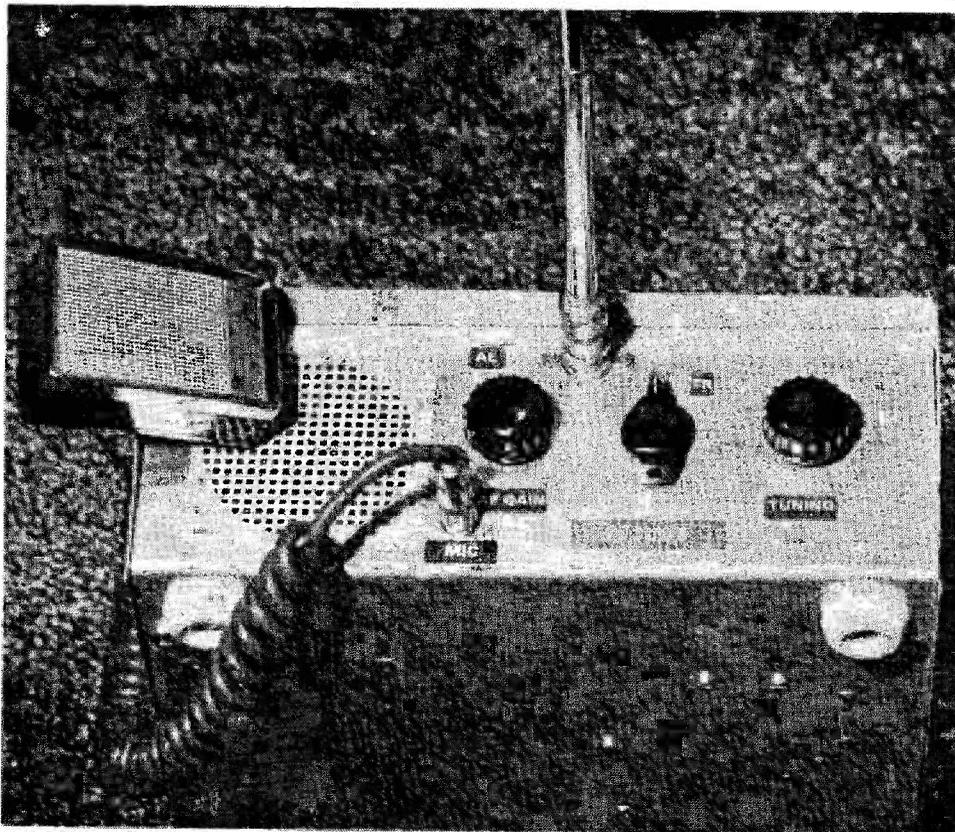
No special precautions need be observed in constructing the amplifier, except to ensure that the cans of the electrolytic smoothing capacitors are isolated from the chassis where necessary, and that the input and output circuits of the amplifier are isolated from one another.

Earthing of the RF circuits should be carried out with the usual care: heavy conductor should be used, with a single earth point for the valve cathodes and the tank circuit capacitors.

No laboratory tests have been conducted on this linear amplifier, so it is not possible to make claims in respect of intermodulation distortion or power output. However, on-the-air tests have produced favourable reports on speech quality, and the SWR bridge in the aerial feeder is showing an encouraging increase in power output over the Sommerkamp FL-200 transmitter (rated at 240 watts p.e.p. input).

AMATEUR RADIO EXHIBITION

This year's Radio Engineering & Communications Exhibition—the Amateur Radio Show—is to be found at the Royal Horticultural Society's New Hall, Greycot Street, Westminster, London, S.W.1. To get there by Tube, take a ticket either to Victoria (Underground) or St. James (District), and then walk towards the Army & Navy Stores in Victoria Street. The New Horticultural Hall is in the immediate neighbourhood—look for Artillery Place, leading into Greycot Street, walk to the end towards Vincent Square, and you will be there. Any bus for Victoria Station or along Victoria Street (ask to be put down at "the Army & Navy") will likewise take you within walking distance. Our street-level front office at 55 Victoria Street is within a few hundred yards of the Army & Navy Stores and whoever you may find on duty there during normal office hours will be glad to direct you. And, of course, any taxi-driver can take you straight to "The New Horticultural Hall, S.W.1"—*don't* ask just for the Amateur Radio Exhibition, because in fact exhibitions of all sorts are held at the Horticultural Halls, all through the year. The taxi-men know where the Hall is, even if they don't know what is going to be happening there during October 2-5, when we hope to be welcoming you on the SHORT WAVE MAGAZINE stand—we are the only remaining firm, paying for our Stand at the full commercial rate, which has supported this Exhibition without a break ever since it started, more than 20 years ago.



General view of the Transceiver complete, with aerial mounting.

TRANSISTOR TRANSCEIVER FOR TWO-METRE PORTABLE

USING ISOLATED
SUPER-REGENERATIVE
DETECTOR

G. B. PACKER (GW3UUS)

THIS unit was built to see just what could be done with low power on the two-metre band into simple antennae. Straightforward circuitry is used, obtained from several sources—notably the "Miniwatt" which appears in the 1968 A.R.R.L. *Radio Amateur's Handbook*.—See p.476.

On "receive" a grounded base RF pre-amp Tr4 feeds a superregenerative detector, Tr5. This pre-amp serves both to isolate the detector from changes of aerial load and to stop any re-radiation. The output from the detector is then passed into a cheap Japanese AF board which produces more than

sufficient audio.

For "transmit" a 48 mc crystal oscillator is tripled to 144 mc and then amplified before being fed to the aerial. Link coupling is used throughout.

Modulation is achieved by another AF board, matched to the PA by a miniature output transformer.

The Receiver

RF Pre-amp: This is identical to the "Miniwatt" circuit. Several transistors were substituted, an unmarked surplus silicon performing the best. A 2N706 should do. Various values of damping resistor were tried, 2.7K giving the best bandwidth consistent with useful gain.

Detector. The circuit used has been going the rounds in the Bristol Channel area, on all frequencies from 70 to 432 mc. For its simplicity it is remarkably sensitive. Without the pre-amp stations 60 miles away have been heard, using just a $\frac{1}{4}$ -wave whip from a local hill top. Care must be taken with the output as any loading will degrade the performance, hence the 330K resistor R8.

[love

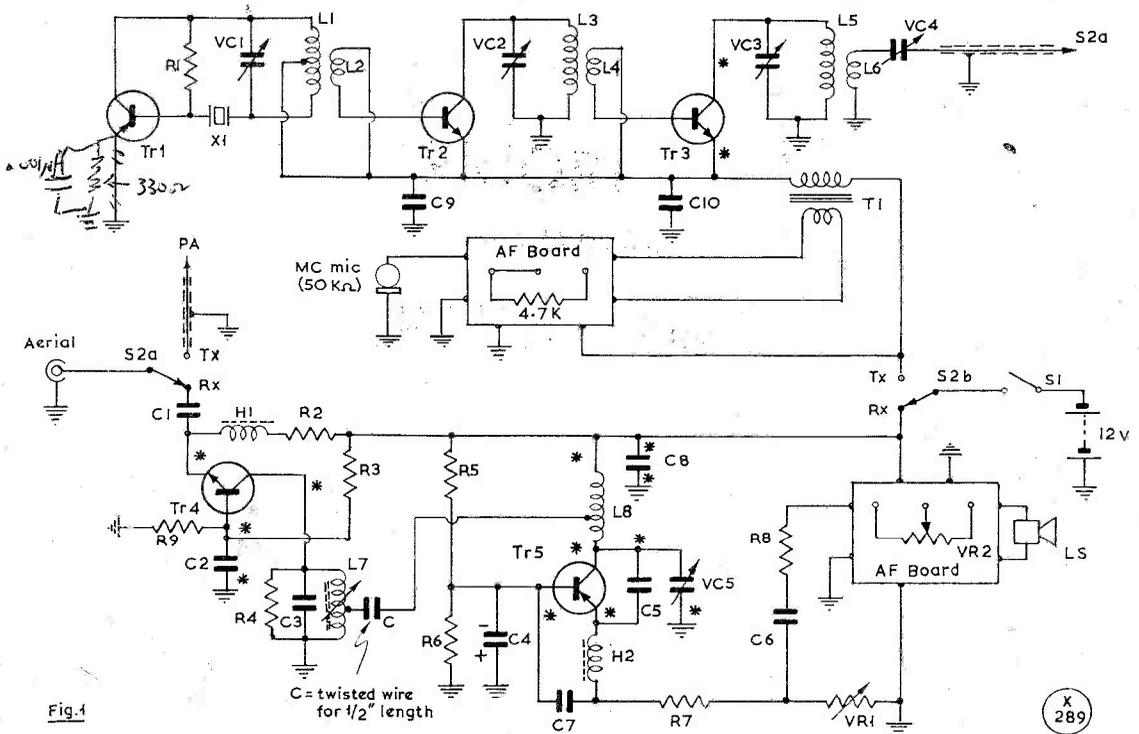


Fig.1

Fig. 1. Circuit of the Two-Metre Portable Transceiver.



The Transmitter

Crystal oscillator, Tr1. To get sufficient drive, always a problem with transistor transmitters, a Squier oscillator is used. The OC170 seemed the easiest to start under load.

Tripler, Tr2. The output from the crystal oscillator is tripled to 144 mc by a 2N706A. This can get rather warm so a small heat sink of some kind would be an advantage. The one used gives more than adequate cooling and consists of a square centimetre of 28g. copper fitted to Tr2 as a clip.

Power amplifier, Tr3. For the PA an equivalent to the P346A is used. This is in a TO5 can and is obtainable from various advertisers for around 3s. 6d. Although it did warm up slightly, the increase in temperature was insufficient to warrant using a heat sink.

Construction

People have different ideas on layout so that the illustrations are given only as a guide. Many might prefer to build the unit like a conventional walkie-talkie with internal microphone. Attention needs to be given to leads marked with an asterisk (*). They should be as short as possible, at least less than 1cm.

Left, GW3UUS, Newport, Mon., with his two-metre transceiver, as described in the article. For a size comparison, GW3UUS mentions that he is 6ft. 4in. tall.

Table of Values

Fig. 1. Circuit of the Transceiver

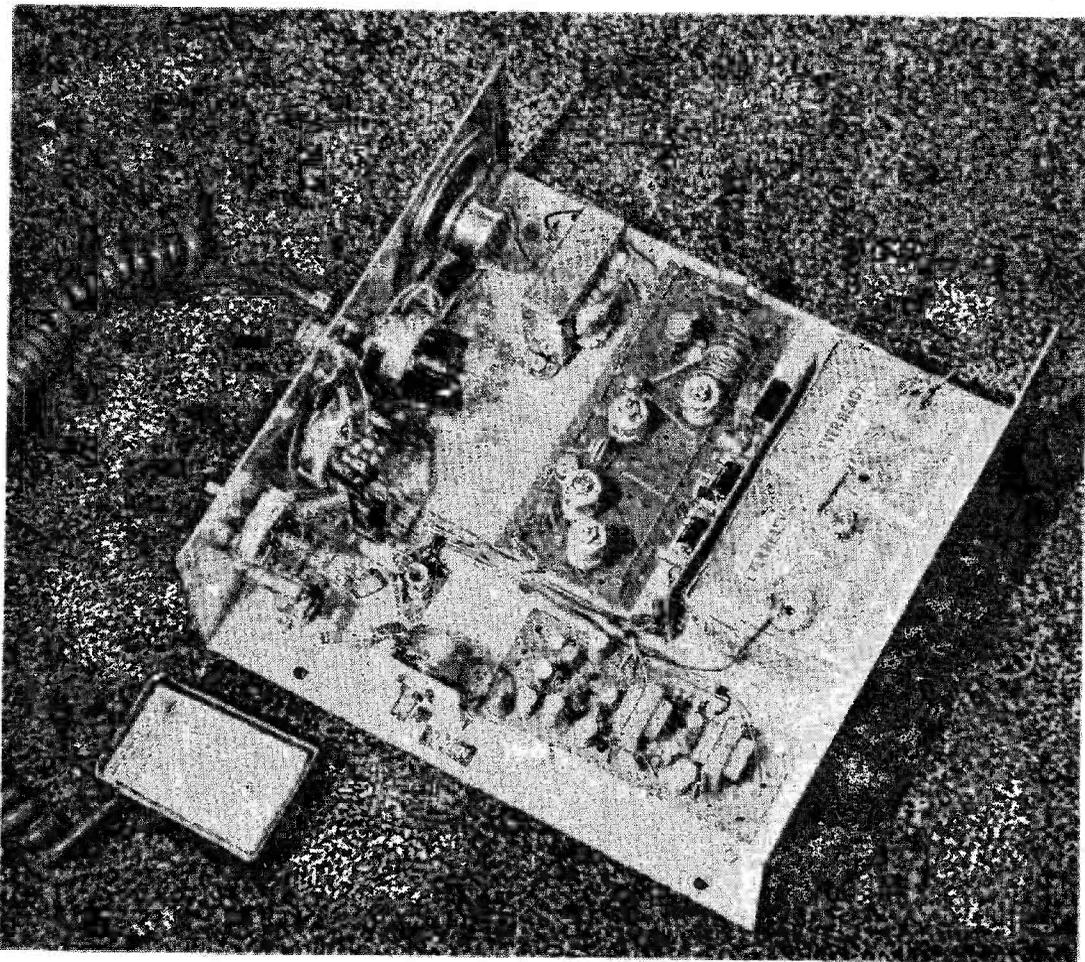
C1 = 100 $\mu\mu\text{F}$	VR1 = 50K, linear
C2 = .001 μF , disc	VR2 = 5K, log.
C3 = 5 $\mu\mu\text{F}$	H1, H2 = RF chokes, 80t.
C4 = 10 μF	40g. on 1-meg.
C5 = 6.8 $\mu\mu\text{F}$	1/2w. resistor
C6 = .01 μF	S1 = With VR2
C7 = 500 $\mu\mu\text{F}$	S2 = DPDT toggle
C8, C9,	T1 = Miniature o/p
C10 = .001 μF	xformer, 3/100
VC1,	ohm
VC2,	X1 = Xtal, 48 mc
VC3,	Tr1 = OC170
VC4 = 3-30 $\mu\mu\text{F}$, beehive	Tr2 = 2N706A
R1 = 15,000 ohms	Tr3 = P346A, or equiv.
R2 = 1,200 ohms	Tr4 = 2N706
R3, R6 = 4,700 ohms	Tr5 = AF186
R4 = 2,700 ohms	L1 = 6t. 18g., c-t
R5 = 22,000 ohms	L2 = 2t. 22g., over
R7 = 1,800 ohms	centre L1
R8 = 330,000 ohms	L3, L5 = 4t. 18g.
R9 = 18,000 ohms	L4, L6 = 1t. 22g.
	L7, L8 = experiment

Notes: All coils self-supporting, 1-cm. diameter, enamelled wire. AF boards purchased as made-up units,

Adjustment

First the receiver. With a modulated signal generator set on 145 mc, switch on the power and set VR1 to a point just before the superregen. hiss stops; this is the setting for maximum detector sensitivity. Squeeze in or out the tuning coil, L8, to put the test signal half way across the tuning range of VC5. The Rx should now cover approximately 130 to 150 mc. With a trimming tool adjust L7 to give the greatest gain, checking that VR1 is still at its optimum point. This is best done by using an on-the-air signal.

Next the transmitter. Put S2 to "Tx" after placing a 100 mA meter in the supply line. By tuning VC1 a peak will be observed on this meter; tune for maximum. Now tune VC2 for a dip in current. Similarly adjust VC3. The final setting up is best done with the aerial connected and using a VHF wavemeter. The wavemeter is a sure check that the transceiver is in fact operating on 144 and



Inside layout view of the Transceiver designed by GW3UUS.

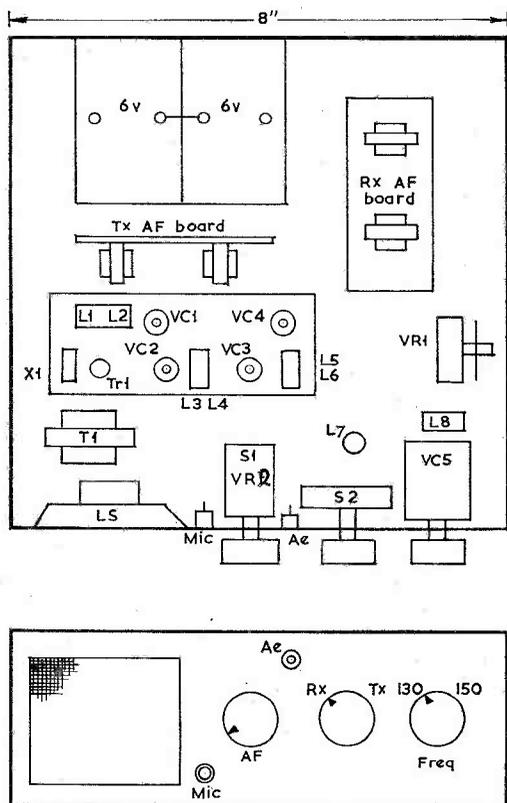


Fig.2. Layout of 2metre Transceiver

X 290

Fig. 2. Layout of the two-metre transceiver.

NEW PREFIX LISTS

On pp.509-514 of this issue appears our latest revision of the Country/Prefix/Zone lists, alphabetically both ways, together with the International Numerical Prefix List—which shows all those new and unexpected figure-letter combinations, often causing a perfectly legit. DX-pedition station to be castigated as a pirate, at first hearing.

In case anyone should imagine that these listings—which have involved many hours of research and compilation—are merely a reprint of what we published two years ago, let it be said that in fact they incorporate about 170 additions and amendments! (It is not till you start on a job like this that you realise what is involved!) The result is the latest, most accurate and fullest Prefix List yet published. If you are at all interested in DX, you cannot be without these new lists. For those wanting desk copies, the content of pp.509-514 is available in a separate binding, at 9d. post free. (Ask for "New Prefix Lists.") A copy is being included free of charge, with all orders for our *DX Zone Map*, price 14s. 9d., which includes postage and delivery in a postal tube to avoid damage in transit. Orders,

not 96 mc. It is only too easy to double instead of triple. VC4 was found to be almost full in for maximum RF but it depends on the antenna used. Input power will be around 200 mW.

Operation

This little unit is useful for cross-town "nattering" but from hills it has exceeded all expectations. The greatest distance so far achieved is 56 miles, location being Machen Mountain, 10 miles from Newport, Mon. The antenna in use was a 4-element beam 6 feet off the ground, a report of 5-6 being received. With just a ¼-wave whip 5-9 reports over 15 miles are usual, even over quite rough terrain.

with remittance, to : Publications Dept., Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1—despatch is by return.

ARTICLE COMPETITION

Further to the Editorial announcement in the September issue of SHORT WAVE MAGAZINE, as the result of enquiries and suggestions it has been decided to add the following categories :

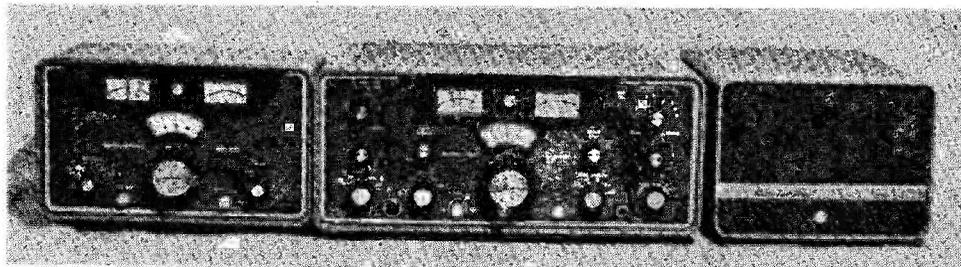
- Aerials**, HF and VHF ; **Mobile**, HF or VHF ; **Static Station** layout and control ;
- Constructional** methods and techniques ;
- and **Log-Keeping** systems and records.

Any entries offered under these additional headings will be considered for the 25-guinea immediate awards. What we do *not* want are heavy theoretical articles, with ponderous mathematical proofs, to arrive at some fact or theory already covered in the handbooks and manuals. Original mathematical work, having a direct bearing on Amateur Radio problems or design, will, however, be given consideration.

All Writer Competition entries, with the category clearly indicated, should be addressed to : Editor, SHORT WAVE MAGAZINE, BUCKINGHAM. All manuscripts will be acknowledged immediately on receipt—and, if you want to feel on the safe side, use the "recorded delivery" service, which costs an extra ninepence.

DELIVERY OF MAGAZINE

If we continue to use what has now become "2nd class post," in many cases subscriber copies may not be delivered till the Saturday. If we use "1st class," not only does our postage bill rocket by 50%—a mere £1000+ a year!—but there is no real guarantee of "first post Friday morning" delivery, especially in more distant parts—it would be just a pious hope on the part of the Post Office. We are investigating the situation with the G.P.O. to see if there is any way in which differential delivery can be avoided. In the meantime, please don't blame us if your copy is delayed—we are doing our best to find a solution.



CONSIDERING THE HALLICRAFTERS SR-400

NOTES AND COMMENT ON AN ADVANCED TRANSCEIVER FOR THE AMATEUR BANDS

THE equipment discussed here is the Hallicrafters SR-400 transceiver, with its associated PSU, the HA-20 DX Adaptor and the various ancilliary bits and pieces that go to make up the full rig.

A first impression of the transceiver itself is one of finish a cut above the average, which might be expected in a Tx/Rx which is rather above the usual run in price. A second one is of rather more facilities for CW operation than one expects in a transceiver.

A total of 19 valves, a voltage regulator, and 27 assorted diodes are contained in the main unit; a further nine diodes are used in the power supply, to give outputs of 280 volts at 100 mA, 750 volts at 500 mA, and an adjustable negative bias supply. In addition, the heaters soak up 5 amps at 12.6 volts. As far as the "DX Adaptor" is concerned, it consists of a VFO and cathode follower, a voltage regulator, and the meter part of a VSWR indicator, the reflectometer section being in a small box with coax connectors; this is intended to be coupled into the transmission line between the SR-400 and the ATU, or aerial; the DX Adaptor is self-powered. All three units—Transceiver, DX Adaptor and Power Supply—are styled to match. There is also a DC PSU available to drive the transceiver under /M conditions.

Probably the main attractions of the SR-400 are, on the one hand, the increased DC input to the PA of 400 watts SSB (about twice the normal run) and on the other the extra selectivity available when receiving CW. If the DX Adaptor is used there is, in addition to the Rx Incremental Tuning giving a shift of a few kc on the receiver around the transmitting frequency, the following facilities: Normal operation of the transceiver with the HA-20 "Off" or at "Standby"; full control of the transceiver by the HA-20 VFO in both modes; split frequency working when the HA-20 controls on "transmit," with the transceiver VFO accepting the "receive" frequency. The function

switch also provides for monitoring of two frequencies simultaneously on the receiver (within the same band, of course) but in this position (with both the transceiver VFO and its companion in the Adaptor in use for "receiving" tuning) the "transmit" position is disabled. Under these conditions, setting the two controls too close will result in them beating in the receiver—but this is a small price to pay for being able to listen to both sides of a pile-up at once, as normal working is resumed at the flip of a switch. The specification has clearly been devised with practical operating in mind, and by an operator of high calibre at that!

The Technical Specification, which defines the limits within which operating parameters may be allowed to fall before being failed on Test, are often not so good in American equipment. Furthermore, there is a distressing tendency with some U.S. manufacturers to allow the Ad-men to reword the specification in such a way as to conceal shortcomings, to the extent of "gilding the lily." Let it be said that the Hallicrafters SR-400 is an honourable exception. The specification is extremely good. The weaknesses are not glossed over. The SR-400 equipment meets its specification. It is an honest piece of gear.

However, your reviewer would wish equally to be honest and say that nothing is ever perfect. This transceiver has some relatively minor shortcomings. The first one concerns the use of 6HF5 valves at a total input of 400 watts to the pair, p.e.p. SSB, or 360 watts on CW. The process of tuning up has to be done *quickly* and strictly in accordance with the method specified, or the valves could be ruined—indeed, the envelope may be "sucked in" by melting of the glass! This applies to any transmitter using the 6HF5 at this level of input, and it is essential that the makers' tune-up instructions be followed to the letter and in the spirit. The second criticism is that the use of concentric panel controls calls for care, and one feels that the styling has resulted in less than ideal knob styles being used, although it is also fair to say that this sort of difficulty lessens with familiarity. Thirdly, the famous Hallicrafters symbol, which appears on the front of each unit, is not awfully pleasing to the eye; it looks lopsided and garish. But it is *meant* to look the way it does—and there are always other possible opinions on the design of a panel motif.

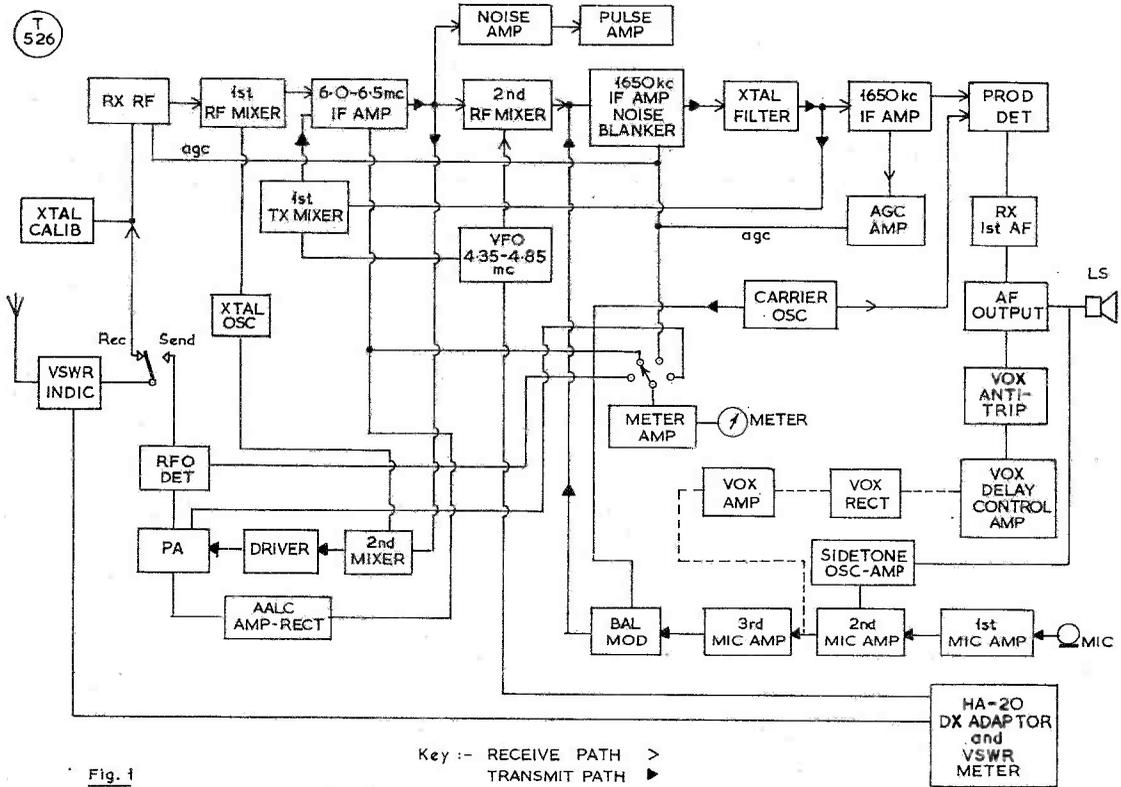


Fig. 1

Fig. 1. Block circuit diagram complete of the Hallicrafters SR-400 Transceiver.

General Arrangement

Turning to the circuitry, the block diagram of the SR-400 is shown in Fig. 1, and is fairly conventional. Refinements that will be noted are the presence of amplified AGC, a noise blanker rather than a simple limiter—which derives its voltage from the area before the main selectivity circuits, to give optimum performance—and the presence of amplified automatic level control of the PA drive, which virtually removes the chance of serious overdriving and the resultant splatter. The metering is of interest; in the first position the meter measures the RF voltage at the output terminals of the transmitter on “send,” and acts as an S-meter on “receive.” A second position looks at the AALC voltage on “transmit” and is S-meter again on “receive,” while the third position provides metering of the PA current.

The widespread use of diodes both as switches and as variable capacitors is noticeable in this transceiver, for example in Fig. 2, where the rather neat arrangement around the six-pole filter FL1, which is used to generate the Sideband signal, is sketched out. The diode D4 is earthed at the function switch as shown in the “Tune” and “CW Transmit” positions. D4 conducts and in so doing connects the resistors R1 and R2 in parallel; the

Oscillator Relationship

BAND IN USE	CRYSTAL FREQUENCY OUTPUT
3.5	10 mc
7 mc	13.5 mc
14 mc	20.5 mc
21 mc	27.5 mc
28 —28.5 mc	34.5 mc
28.5—29 mc	35 mc
29 —29.5 mc	35.5 mc
29.5—30 mc	36 mc

On these bands, actual crystal frequency is half the indicated frequency.

resulting change in the voltage at the junction of R2 and R3 is enough to cause D1 to conduct and short out FL1, thus letting the carrier through without the attenuation which would normally result by the carrier frequency being on the side of the FL1 response. When the gear switches over to “receive,” the voltage on the transfer line makes D3 conduct, thus biasing D1 to cutoff, and making FL1 operative again. *Definitely* cunning!

Transmitting Upper or Lower Sideband is done by setting S2 to the other two positions where D4 is not grounded, and so D1 cannot short out the FL1; there are of course provisions elsewhere to make the other switchery deal with the carrier

TABLE 1

SR-400 Transceiver. Valve Line-up

V1-12DKS	Receiver RF Amplifier
V2-7059	Receiver 1st mixer-Transmitter 1st Mixer
V3-7059	AALC Amplifier-IF Amplifier
V4-12AT7	2nd Receiver Mixer-VFO Amplifier
V5-7059	Noise Amplifier-Pulse Amplifier
V6-6GX6	1st 1650 kc Amplifier/Noise Blanker
V7-7059	2nd 1650 kc Amplifier-Sidetone Amplifier
V8-7059	AGC Amplifier-Meter Amplifier
V9-12AT7	Product Detector-1st AF Amplifier
V10-OA2	Voltage Regulator
V11-6AW8A	2nd Transmitter Mixer
V12-7056	Crystal Heterodyne Oscillator
V13-12BA6	VFO
V14-12AT7	Carrier Oscillator-3rd Mic. Amplifier
V15-6AQ5A	Audio Output
V16-6HF5	} PA Valves
V17-6HF5	
V18-12BY7A	Transmitter Driver
V19-12AT7	1st and 2nd Mic. Amplifiers
V20-12AT7	Vox Amplifier-Relay Amplifier

frequency, VFO, and so on, as necessary to complete the operation. The sharp CW position is obtained by means of S1. Closing the latter gives SSB reception, since the voltages around D2 are such that the latter conducts, and shorts out X1, the single crystal filter. Opening the switch lifts R4 from earth, so that the diode ceases to conduct, and X1 acts as a single crystal filter ahead of the

main filter FL1, to give a sharp nose; the excellent skirt selectivity of course comes from FL1. The notch-filter comprises X2 and the varicap diode D5, this being capacity controlled by varying the voltage on it by potentiometer RV1, this "rubberising" X2 so that the series resonance is shifted as desired across the passband. To get it out of the way when transmitting, a contact of the Vox relay opens, and so lifts the voltage at the slider of RV1, the crystal then being taken right out of the passband.

As a matter of interest, all of the semiconductor diode tribe display the effect of variable capacitance to a greater or lesser extent, although the behaviour of any normal diode is a matter of "suck it and see." Nonetheless, the use of a varicap to enable trimming of a VFO against a calibrator pip without shifting the dial about is possibly of interest,

Table of Values

Fig. 2. SR-400 Filters

C1 = 0.02 μ F	FL1 = 6-pole Lattice Crystal Filter
C2 = 470 μ μ F	X1 = 1652.2 kc crystal
C3 = 47 μ μ F	X2 = 1651.7 kc crystal
C4, C5, C6, C7, C8, C9,	D1 = 1N295
C10 = 0.1 μ F	D2, D3, D4 = 1N456
C11 = 39 μ μ F	D5 = 1N3182 Varicap Diode
C12 = 10 μ μ F	RFC1, RFC2 = 1 mH
R1, R2 = 4,700 ohms	RFC3, RFC4 = 0.7 mH
R3, R6 = 100,000 ohms	S1 = Function Switch
R7, R8 = 2,700 ohms	S2 = Sharp/Normal
R4, R10 = 10,000 ohms	RL1 = Contact of Vox Relay
R5 = 220 ohms	
R9 = 50,000 ohms, variable	

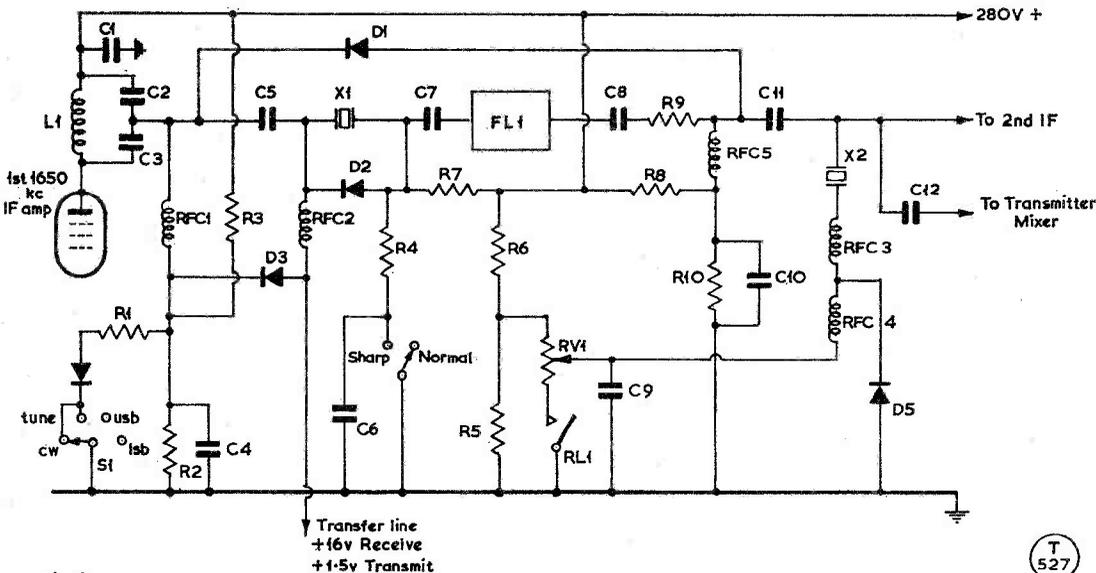
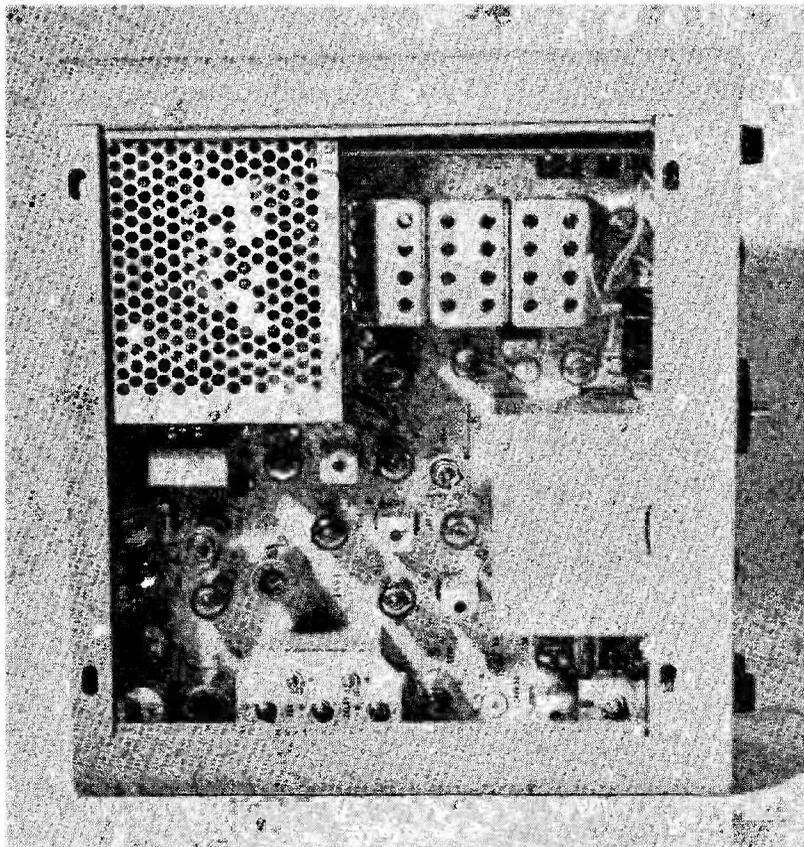


Fig. 2

Fig. 2. Crystal filters and rejection notch tuning, SR-400.

Upper view inside the SR-400, with the front panel of the equipment to the right. The PA section is under the grille shielding. The general arrangement follows well-established layout for transceiver designs of the type.



makers say 200 watts for 400w. p.e.p. input, and slightly less on 21 and 28 mc—but the loss on these two bands is very slight, at least on the specimen tested, and a very beefy signal can be put out on any of the bands.

TVI Aspect

This will interest many people. Here it should be realised that our Ch.1 is lower in frequency than any of the American TV channels, and so most of the American equipments will tend to produce TVI on this channel. The SR-400 is no exception to this rule, and there is no doubt that while the ALC is very good at removing splatter on our bands, the moment the PA runs into grid current, as indicated by the ALC metering, things start to happen to the picture. If a dummy load only is tried, the effect almost disappears, indicating that in a fringe-area location considerable care is required if problems with TVI are to be kept under control. Similarly, it was found that even at reduced input slight troubles arose with key-clicks on the TV Rx. What all this boils down to is that the transmitter is clean in itself, but in a fringe area (low TV signal) would need extreme care if TVI is not to be a problem. The results were obtained with a KW low-pass filter in the ATU

feeder, and a KW high-pass filter in the TV set lead, which are normally enough to ensure no trouble with British commercial equipment provided the PA is not overdriven.

However, all these comments must be taken in conjunction with a fringe-area Channel 1 BBC TV signal, a poor TV aerial, and the transmitting aerial centred a few feet above the TV one. In areas of higher field strength and higher frequency channels with better aerial separation, the difficulty should not be too great.

There is no doubt about the fact that this rig seemed better able to make them come back, and to hold them once hooked, than many others, both on CW and SSB; and it is fair comment that one or two new ones were added to the score which the equipment normally in use would have probably missed.

Summing up, we may say that here is a rig that would grace any shack, that performs extremely well indeed both as receiver and transmitter, and which must come pretty close to the ideal of most "advanced amateurs," who have the urge to work both CW and phone, in the minimum space, and without the addition of an outboard linear amplifier.

THE MOBILE SCENE

SEVERAL SUCCESSFUL EVENTS
REPORTED — INCREASED
ATTENDANCES IN GENERALLY
GOOD WEATHER — PICTURES
AND COMMENT

HAVING now passed through the Mobile Rally Season, it is evident that for most of them a pattern generally acceptable to visitors has been evolved—efficient talk-in operating and control, the minimum of regimentation on arrival, not too many competitions on the ground, some side-shows for the youngsters, a really attractive raffle, adequate refreshment facilities on site, consideration for the distaff side and—in particular—plenty of time (and space) for strolling round to see and be seen. Quite a commitment for any Rally organising committee, but certainly achieved by many of them.

For in reality the U.K. Mobile Rally, in the radio amateur context, has now become what is essentially a social occasion—which is as it should be.

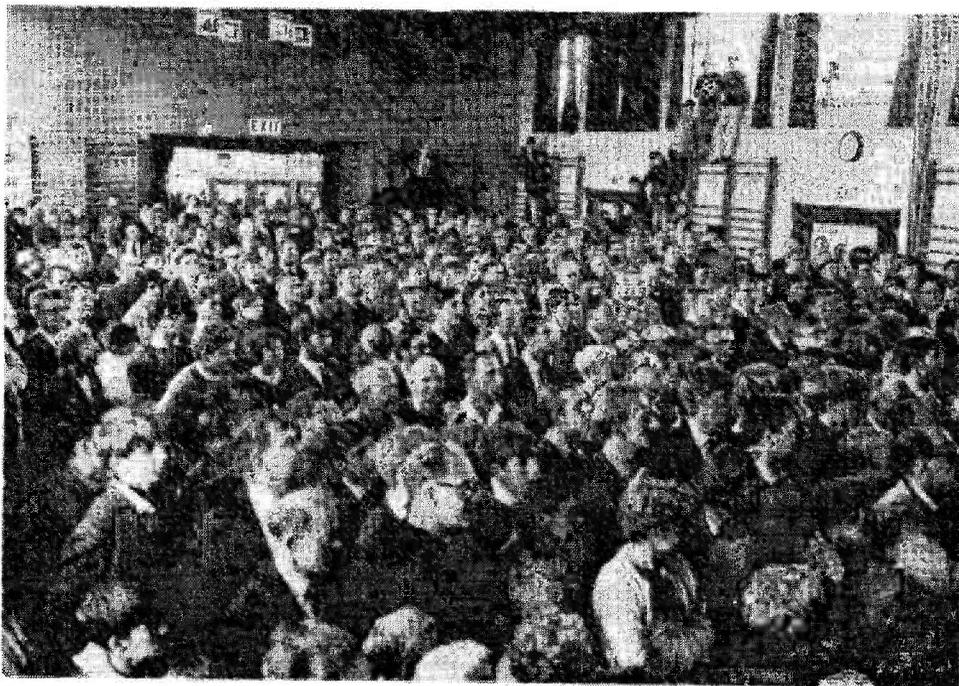
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One of the biggest and best-organised events in the Rally Calendar took place on August 18—the annual gathering of /M's arranged by the Derby & District Amateur Radio Society, and the eleventh in their series. Once again, they had glorious Wx, attracting an attendance of about four thousand, with more than 850 vehicles in the parking spaces by mid-afternoon. The local Mobile Police co-operated with a live road-safety demonstration—it is a good thing to have the Police in as guests on these Rally occasions, as they are always pleased to have the opportunity of making unofficial contact with the public—and, as usual, the junk sale and prize draw attracted enormous support. Of the 300 or so licensed amateurs actually signing in, there were DX representatives from ZL, VE, 7Q, 5A, MP4 and OK. The trade stands are reported to have done good business, the visitors departed happy, and the organisers—with G3FGY in charge of events as chairman and master of ceremonies—felt that once again "Derby" had been a success.

* * *

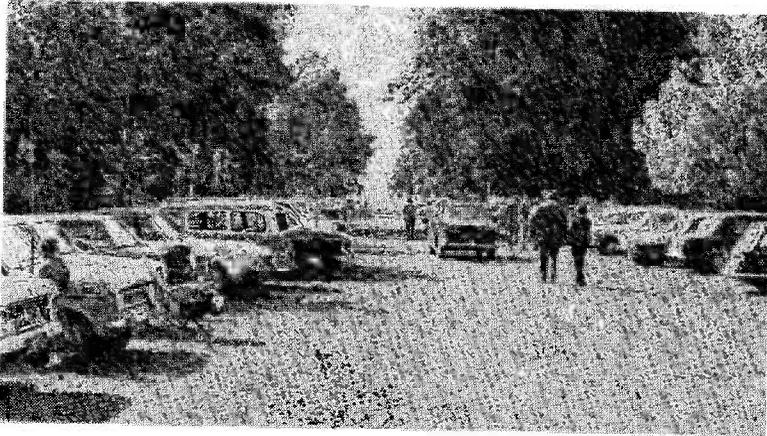
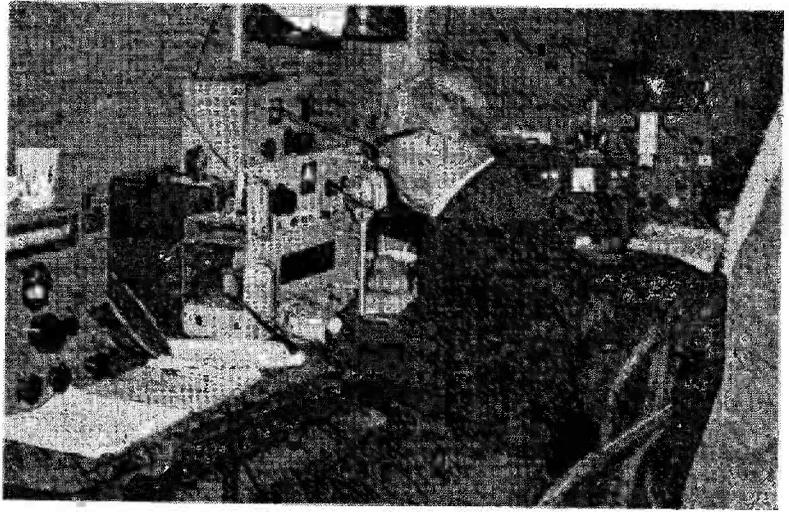
Also on Sunday, August 18, the Torbay group staged their fourth Mobile Rally, at Dartmouth, Devon. In the same perfect weather—dry, warm and sunny—they logged an attendance of about 200 people, in 85 conveyances of various kinds, a third

[cont'd p.485



One of the regular attractions at the Derby Mobile Rally, held this year on August 18, is the mammoth junk sale, conducted by G3FGY. For their eleventh of the series the Derby & District Amateur Radio Society had a record attendance, in glorious weather, there being more than 850 cars parked by mid-afternoon.

The Top Band talk-in station, which had many contacts, for the Preston Mobile on September 1, with G2AXH operating.



The pleasant surroundings for the Swindon Mobile Rally at Lydiard Park, on August 25, are well suggested by this view. Of the 185 cars checked in, about 70 were fitted /M.

Outside the main marquee for the Swindon Rally. All the stands and inside events were under this spacious cover. The attendance was estimated at about 500 people.



of them being fitted /M. Talk-in was given on 160m., 80m. and two metres, and winners of the longest-distance contacts with control on these bands were, respectively, G3PU/M (Weymouth); G3GMN/M (Gloucester); and G3PWJ/M from Warwickshire, on two metres. The best mobile installations were adjudged to be those shown by G8ADP/M (Teignmouth) and G3PWW/M (Godalming).

* * *

The Swindon & District Amateur Radio Club put on their Mobile Rally, for the third occasion, at Lydiard Park, on August 25—again, in blessed weather, attracting some 500 people in 185 cars, about 70 of which were equipped for mobile; as usual, the great majority were on Top Band. Prize winners for the DX contacts with control were: G2AMX/M (160m.); G3FHL/M (4 metres); and G3TOQ/M (two metres). The best home-built installation was judged to be that shown by G2BSR/M, and the prize for the best commercial rig went to G3OOD/M. In addition to the main raffle, with a prize for practically everyone (!), they ran a special draw strictly for the feminine interest, the gifts being guaranteed to have no appeal whatever to the

OM side. (Well, there's another idea for next year's Rally organisers!) Refreshments were arranged by a local catering concern, to relieve the always-willing wives and girl friends of this particular chore.

* * *

Bromsgrove & District Amateur Radio Club had a bad day, weather-wise, for their event at Piper's Hill Common. Nevertheless, 31 mobiles clocked in and between the showers people got around. The draw produced a prize for everybody. Locals G2CLN (the Club chairman), G3NOY and G3WUG coped with the talk-in and other arrangements.

* * *

The very first Mobile Rally to be held in the North-West—laid on by the Preston Amateur Radio Society, on September 1 at the famous North End's ground—proved to be a popular rendezvous. They attracted an attendance of about 500, with the Football Club's car park as the rallying point—so there was plenty of space. The indoor accommodation was close adjacent, with much to interest visitors. As has been the experience with all Rallies this season, it was the 160-metre talk-in station that

[cont'd p.488]

Some of the crowd working over the surplus stall at the Preston Mobile Rally on September 1. This was the first event of its kind organised by the Preston (Lancs.) Amateur Radio Society, and was most successful.





General view of the array of cars arriving for the Derby Mobile Rally, during the afternoon of August 18. A large proportion were fitted for mobile.



The talk-in station for the Derby Mobile Rally, signing G2DJ/A for 2m./4m., was manned by G8BAV (at the controls) assisted by G8BGX—but as usual most of the /M traffic was on Top Band.

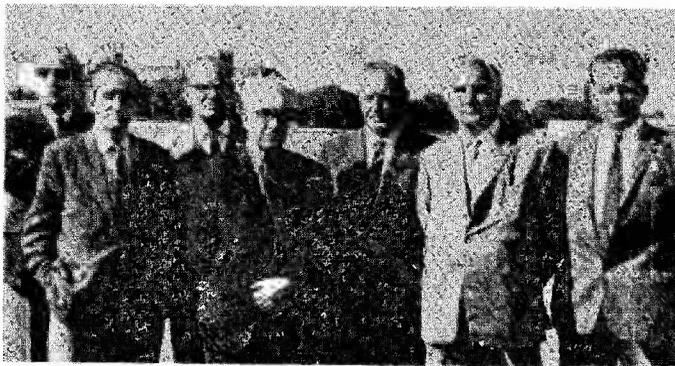


(Above) A delicate proceeding, watched by eagle eyes—conducting the prize draw at the Swindon Mobile Rally. Individuals are not identified but obviously they are aware that they are under close scrutiny!



At left, the party, left to right, are G4JW, ZL2BDA/G3PHO, MP4TBO (and xyl), G2CVV, hon. secretary of the Derby group organising the Rally.

Group of old timers at the Peterborough Mobile Rally on September 2. Left to right: G2BYI, G4RT, G3WW, G3DY, G3BK, G8BI and G3QS.



handled the bulk of the /M traffic, being kept busy till late in the afternoon. Basil O'Brien, G2AMV, well known in the North-West, was in the chair for the opening and subsequent proceedings. The Preston group, being well satisfied by the response to the first Rally event they have tried, intend to make it a regular feature of the Mobile Calendar—well done, boys!

* * *

On September 2—"August Bank Holiday"—the riverside of the Nene at Peterborough was adorned by those who turned up for the Mobile Rally arranged by the local Club, of which G3KPO is one of the prime movers. On this occasion, they had a bigger turnout than ever before. The theme was "Fifty Years of Wireless—1918-1968." Early valve sets with horn speakers could be heard actually working, also crystal receivers with headphones—"you scratch for the sensitive spot on the crystal and then, there it is, loud and clear"! They even had a slide-tuner and coherer detector of the

pre-Kaiser's War days on view—and that goes back more than 50 years. We congratulate the Peterborough group on their enterprise.

* * *

And that's it for this time, and almost for this year, for unless something of exceptional interest comes in on the last of the Rallies, there will be no more "Mobile Scene" reporting till the season starts again in 1969.

We give a lot of space, considerable effort and some expense to the presentation of this feature which, over the years, has made its own contribution to the development of the mobile interest in the U.K. Only now remains for us to say that for the 1969 Rally Season, following dates are already booked: *April 20*, Midlands Rally at Drayton Park; *August 17*, Derby Mobile Rally. So, in your own plans for next year, don't tread on these toes, because to ensure success for your event, you need a clear date or, at the least, the widest possible separation geographically.

SCOUT JAMBOREE ON-THE-AIR — OCTOBER 19-20

The time is fast approaching when local plans should be completed for participation in this event—see p.424, September issue. We have since been informed that for this year the international control station will be 4U1ITU, Geneva, working all bands over the period 0001z October 19 till 2359z October 20. The frequency schedule for 4U1ITU will be as follows:

CW: 3515, 7015, 14070, 21070 and 28070 kc.

For SSB Phone working, the frequencies will be: 3730, 7070, 14185/14290, 21290 and 28700 kc.

Bands to be used by 4U1ITU will depend on conditions, and frequencies given should be taken as "on or near." In addition, the following Special

Scout Stations will be on the air: AP2NMK, DU1BSP, GB3BPH (London), GB3BSI (Brownsea Island, where it all started), K2BFW (Hq. station of the Boy Scouts of America), XE1ASM and ZS6JAM. Many of the stations taking part will be offering a special QSL card to commemorate contacts made. Immediately following the event—which is strictly a QSO Party and *not* a contest—we would be very glad to have reports (with, where possible, photographs) of U.K. stations participating in the Jamboree. The sort of information we want is brief notes on results achieved, DX or otherwise, mentioning in particular the local Scout group concerned. It is the intention to incorporate these reports into a feature article to appear in our December issue. The U.K. Organiser for the Scout Jamboree-on-The-Air is L. R. Mitchell, G3BHK, *QTHR*.

COMMUNICATION and DX NEWS

E. P. Essery, G3KFE

POSSIBLY the major event of the month under review is the occupation of Czechoslovakia by the Russian troops, and the brave behaviour of the OK stations under the conditions they had to face. Leaving out of account operators signing with such calls as "OK1-PRAGUE," OK5SOS," and such-like, it is evident that the Freedom stations which so suddenly appeared most probably were set up and operated by amateurs, to a large degree—who else would have the expertise to get such stations on the air in so short a time?—and that therefore these chaps, who almost certainly were previously regarded as "politically reliable" have sacrificed their calls, at the very least, and possibly much else as well.

They deserve a salute.

On a lower note, we have it that the W9WNV/ARRL half-million dollar lawsuit has been withdrawn—just as we expected, and as implied on p.289 of our July issue. What has not so far been said by anyone, anywhere, is that these extraordinary and extremely expensive DX-peditions, undertaken by Don Miller, W9WNV, over the last few years, could really only have been financially possible if they had been sponsored by some official U.S. body—let us imagine, the C.I.A. (Central Intelligence Agency, an organ of the U.S. Govt.). Whether this is the truth, or even if it will ever come out as such, time alone will tell. But the fact remains that Dr. Don Miller, W9WNV—who is a qualified physician, by the way—is a determined and highly efficient DX operator, of an unusual kind. As such, he has given great pleasure to numbers of DX-conscious operators throughout the world. . . . Let any dogs, now sleeping, lie . . . (Our guess is that the ARRL has been taught a sharp lesson.—*Editor.*)

Around The Bands

The expected upsurge in conditions duly seems to have come to pass,

with even Ten suffering more from lack of activity than lack of openings, and Top Band static levels declining from the ear-splitting summer level in the general direction of the tolerable and even on occasion quite quiet. On other occasions, one has to admit, a quick spin over the spectrum would lead one to the view that a well-filled bookshelf was preferable to operating!

Forty

Here let G3NMH open the account; Hal has been investigating the way in which the rest of the world lives by trying 40 metres. A very successful working, we might add, with 8P6BH, VP2KF, FY7YK and 9Y4KR as the prizes, but

W8MMC, W4DLN, ZS1JA VK2AVA, CN8AW, TA2BK, PY's, LU2DGO, LX1SL, VP8JB, VP8JG, VP8HZ, VP8JC, VP8IA, TF3EA, 9M2PO, 9M2DQ, 3V8AB and OX3DX raised as well. All these in the period between 2200 and midnight, which lends weight to the view that this band is nothing like as useless as it is often painted.

The note from G3PQF (Farnborough) mentions no actual contacts, but indicates a continued interest in 7 mc, and cards in from G3SVK from Alderney and Sark.

Surprise, surprise! G8HX (Mansfield) has spent some time off Top Band, for the first time in fifteen years, thanks to the acquisition of a K.W. Vanguard. Frank has

SIX-BAND DX TABLE
(All-Time Post War)

Station	Countries	28 mc	21 mc	14 mc	7 mc	3.5 mc	1.8 mc
G3DO	334	188	231	327	90	83	9
G2DC	335	169	307	327	163	108	20
G3NOF	311	156	204	295	34	39	1
W6AM	348	131	140	347	116	54	7
G3IGW	204	123	152	167	122	86	42
G3LZQ	246	119	153	194	71	38	8
G3IAR	217	106	156	191	82	65	11
G3PQF	143	82	42	80	83	49	11
G8DI	187	80	132	164	77	46	8
G3IDG	121	72	87	54	27	19	11
G3MDW	115	46	66	82	20	15	7
G3VDL	132	46	96	96	45	22	—
G3NYQ	147	35	70	107	40	30	21
G3SED	85	2	18	55	38	32	37
G3VPS	84	—	28	59	50	28	14
G3WJS	53	—	—	43	28	35	11

Note: Placings this month are based on the "28 mc" Column.

been on both Forty and Twenty, with the Top Band aerial hooked to the Vanguard, and seems to have enjoyed it.

SSB contacts on Forty for G2HKU (Sheppey) have been all rather hard going, thanks to the variety of horrible noises that infest the band; but PY4ND, CT2AP, EI9Q, 3V8AB, OX3DX, CN8AW, and 3A2MJC all succumbed. Ted reckons that one of the best ways to help clear the band is to tune up on a BC station—albeit one can hardly curse Radio Peking, when the BBC is also pumping out RF quite frantically about 10 kc HF of our part of the band but within the allocation for the rest of the world.

Someone else also suggested that it would not be a bad idea to write to these intruders suggesting that one likes to listen to their signals but it is not possible due to the interference from amateur stations—if enough people did this perhaps they would go away!

G3TLX (Edgware) put up a Lazy-H for Twenty, and found that it loaded up and went like a bomb on *all* HF bands, with a couple of

S-points improvement in reports, and as a bonus worked quite well on Forty; indeed the first QSO on this band with it was 6W8XX. Others contacted were 3V8AA, K4PHY/YV5, CX3BH, HK3EV, 5N2AAX, W/VE, CM2DC, G6ZY/CN8/M, ZD9BE, MP4BGU, PY's and VK's, all on CW.

The CW mode was also favoured, as always, by G2DC (Ringwood), who worked PY1SJ, VK2BRK, VK2BFJ, VK2VN, VK3KS, VK3XB, all W call areas, VE1-4, ZL1AH and ZL3JC. Jack takes issue with the comment in these columns last time about the use of Phone at the CW end of the band; his niggle is not the odd chap who is just inside the CW allocation, but rather with the Sunday-morning tribe who go right past the phone limit and well down to the LF end. While one can forgive a chap who accidentally slips the odd kilocycle over the border, to use phone, and in particular AM phone right, at the CW end of any band, whatever the conditions, is liddery of the first order.

Top Band

Why have so many amateurs given up operation on the HF bands in favour of Top Band or VHF? Indeed, who are so many completely inactive? The writer has a strong feeling that the main cause is TVI—not because it is impossible to cure it, or at least make a transmitter that will pass the GPO, but rather that having done so, the problem of TVI generated by the TV set itself rears its head; and rather than risk neighbour problems, and all the ill-will that can be brought down on the head of the XYL, most operators prefer to keep to Top Band or VHF during the goggle-hours with the occasional foray on other bands out of TV time.

While the old problem of TV receivers with IF's in an amateur band is now almost dead, there is still the practice of using low-pass sections at the front-end of TV sets which allow the transmitter fundamental to cross-modulate or drive the TV Rx into grid current, and also the universal use of AC/DC techniques with the consequent lack of effective grounding of the TV feeders at lower frequencies.

Turning to the hard news, there

is so much of it this time that a certain amount of compression becomes necessary.

First, the W1BB news, and details of the 160-metre Transatlantic Tests for the coming winter: The dates are December 1, 15, 29; January 12, and February 2 and 16. The usual "First-Timer's" tests are slated for December 15 and February 2 for the European stations. Timing 0500 to 0730z, and frequencies as follows: *East Coast W's*, 1800 to 1820 kc; *West Coast W's*, 1975 to 2000 kc; *Europeans use 1823-1830 kc and 1851-1861 kc only*. Call "CQ DX Test" on alternate five-minute periods, W's leading off with the first period (clocks accurately set, please). Keep strictly to the periods, unless actually in contact. Those who have already got over should stay off during the First-Timer sessions, to give the newcomers a chance. However, if something rare and interesting comes up which is really wanted during one of these sessions, then the proper ploy is to work him, make it as snappy as possible, and get off the frequency. Stew also mentions that W4BPD is once again thinking in terms of DX-peditioning and will be carrying Top Band gear when he does; DL9KRA also has plans to reactivate some of the rare ones he has previously visited and possibly to add more to the list. W0VXO is also mentioned by W1BB as intending to base himself in the Caribbean and activate some of the surrounding parts—and G3NOF (Yeovil) adds a bit of later news that Herb is in fact already signing W0VXO/KV4 most days on 1820 kc at 0200. He can be contacted through Box 310, Christiansted, St. Croix, U.S. Virgin Is., for sked-making purposes.

A very nice first letter from GM5AHS (Brechin) who has been told that Kincardineshire, where his base is located, is a rare one, and proposes to do something about filling the gap. For the moment, Steve is CC, with crystals at 1804, 1851 and 1902 kc; however, as he somewhat ruefully remarks, Stonehaven Radio only fifteen miles away rather takes care of the 1851 kc rock! As to the cards, Steve would prefer direct, as the bureaux seem to be a little slower on the G cards than the overseas ones—and he is himself chasing counties. The

TOP BAND COUNTIES LADDER

Station	Confirmed	Worked
<i>Phone and CW</i>		
G2NJ	98	98
GM3UUVL	96	98
G3APA	95	96
G2HKU	86	92
G3WQQ	74	87
G3WPO	74	82
G8HX	68	83
G3VLX	55	85
G13WSS	55	76
G3IDG	55	61
G3WJS	32	73
G3XGD	23	53
<i>Phone only</i>		
G2NJ	96	98
G3VGB	77	90
G3WPO	51	67
G3PQF	42	73

(Failure to report for three months entails removal from this Table. Claims may be made at any time.)

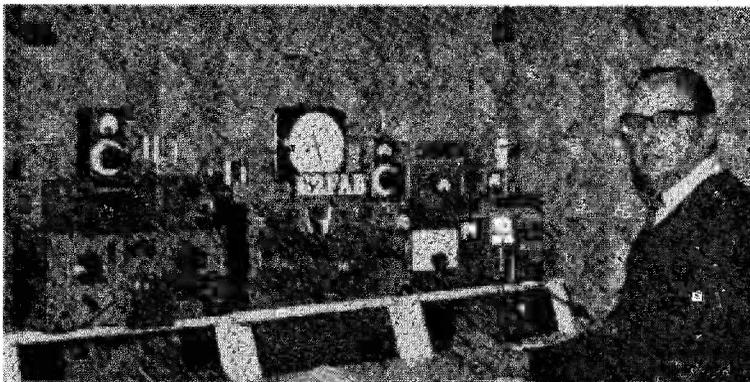
address for cards is P.O. Box 574, RAF Edzell, Nr. Brechin, Angus.

The trick of getting the mobile whip to load on Top Band has been performed by G3AAQ/M, by way of an extra base loading coil to resonate the HF band whip; in terms of results, he worked G3VNW in Leeds from Rugby on it in daylight, and also managed GC3TN/P in Guernsey in daylight. A couple of days in Scotland gave QSO's with Cheltenham and Nottingham from Ayrshire, and a couple of Kent QSO's from Kirkcudbright. As Jake says, at least this proves the gear works!

Phil, G3XAP (Stowmarket) has a real prize of an aerial for Top Band on the stocks, which should put him into the running for VK/ZL contacts, leave alone mere GDX working. This monster of a radiator is planned to go up around the November period, so keep an ear open for G3XAP at 59. As one of the diminishing breed of newcomers who have served a good apprenticeship at the SWL game, as a study of back numbers of "SWL" would reveal, G3XAP will be equipped not only with a big signal but the operating skill to go with it. The results should be interesting.

A highly delighted G3UAN (Kenton) writes in to mention his operating gains, also that he has brought home the bacon in his exams, and will be coming on from Sussex University, where he goes in the autumn to start a degree course in Electronics. He also aims to take his diploma on the piano at Christmas—which should be good for the keying reflexes! During the holidays, Robert spent most of his time on the HF bands, but did manage GW3VYF/P and GC3LDH/P.

All hot under the collar is G3SIL (Stanmore) who reacted quite strongly to the August Editorial, and that piece on page 410 of the September issue about the EU Band Plan. G3SIL reckons that as far as he is concerned, the phone end goes right down to 1850 kc, and the suggestion that the dividing line is at 1900 kc is just an example of our "outrageous anti-Phone bias!" Really, there is not much argument that the proposition always was for the band to be evenly divided, and over the years it is the phone people who have gradually en-



Sent in by his friend SWL Tomes (Balham, London), this is the station of G2FAB, owned and operated by D. H. Garrard, 7E Macaulay Road, Clapham, London, S.W.4, whose gear—with the exception of the receiver—is all home-built. G2FAB works all bands, including the VHF's, and for the HF bands the main aerial is a 132-foot wire, through ATU coupling.

croached until the recognised SSB spot is as low as 1875 kc. But this has happened mainly because of the tolerance of the CW men—and no-one who is on 160m. at all regularly would describe G3KFE as other than a Phone operator, at least as far as Top Band is concerned, and G6FO himself probably uses as much Phone as CW on the band.

A keen type is G3VWC (Bishops Stortford) who has been out of our piece for some while due to studies and things. However, Andrew has contrived to find a holiday job which enables him to get in some operating at work as well as coming on from home with a new rig which has full CW break-in. This one gave him contacts with G3LOV, G3LDH/P, G3SVK/A in Rutland, GM3BGW for Fife, GM5PM (Clackmannan) and G3WJS for Dorset, just before the latter moved to Halstead.

And talking about G3WJS, his is the next letter in the pile. John is cross with your conductor, because G3KFE, in a net with G3PBC and G3UOF, reported the G3WJS signal as being uncopiable—at all of twenty miles!—before being called away to the telephone; but that's not all, because when we got back into the net, in hopes of being able to winkle G3WJS out, lo! there *he* was, gone. However, the G3WJS aerial system seems to be doing odd things like this in the fashion typical of a good DX aerial, for it gave contacts with GM3VGU/P, GM3VIO/P (both Sutherland),

GM5PM/P in Clacks., GM3VAR for Berwick; GM3XEJ/P, Kinross; GM3TSL/P in Kirkcudbright and Peebles; GW3XGP/A, Merioneth; and GW3UID/P in Brecon and Montgomeryshire, all on AM.

GI3WSS (Holywood, Co. Down) found things highly interesting, thanks to all the DX-peditions, which raised the score quite a bit. However, Cyril was a little niggled at failing to connect with at least two of them because a high static level which made them almost uncopiable—that is annoying, to hear others calling them but not to be able to copy. GI3WSS still needs contacts with the following English counties: Dorset, Hereford, Oxford, Westmorland, and Cumberland—volunteers step forward, please!

One up for G2NJ—or rather 98, with the last one to be booked in as GC3SVK on Jersey, with the Sark contact also aiding. So Nick has now made the 160-metre Top Spot on Phone, as well as on CW—a feat on which he is to be congratulated. Quite a record!

G3WPO (Burgess Hill, Sussex) mentions only one QSO, with K1BPX, at 0313z; Tony worked him in spite of a fairly high static level, and is waiting the card to prove the contact good.

It is surprising how different people's views can be of the same band, over the period. G8HX claims it has been the worst he has ever known for activity, with no AT signals audible night after night, and yet a QSO on September 2

ALL-BAND ZONES AND PREFIXES TABLE

Starting date: January 1, 1968

Station	Zones	Prefixes
G3IAR	40	330
G3LZQ	40	240
G3AAQ/M	26	239
G3PQF	26	193
G3SED	24	110
G3IDG	22	93
G3VPS	18	182
G3WPO	18	149
G3WJS	17	191

being QRM'ed by no less than three other stations. On the other hand, young Robert, G3WUD (Bramhall, Cheshire) who was not even born when G8HX deserted the HF bands, reflects what is probably nearer the majority view when he says he thinks it must have been the best summer ever from the GDX expedition point of view, with G3SVK especially to be thanked for the number of rare spots he has activated with such a good signal.

G3WUD, like G3XGD (Sheffield) and G3XAP is also an ex-SWL correspondent who made his mark in the HPX Table, in our "SWL" feature. G3XGD seems set fair to knock a dent in the Top Band Tables, and uses mainly CW even though he has now got the modulator into a fully functional state. Incidentally, Glyn lashed out on an electronic bug at the Derby Rally, and nearly went dotty trying to learn the knack of driving it, before he used it in earnest on the bands, to get up to 53/23. However, G3XGD will shortly have his activity limited by his move to the University of Kent, and the need for a certain amount of nose-to-grindstone stuff.

G2HKU (Sheppey) makes a valid point when he comments that some of the GM expeditions got rather too close to the beacons for the comfort of the Southern stations; they were probably inaudible up there but certainly were a nuisance to Ted. Nevertheless, he worked GM5PM/P Clackmannan; GM3LHV, GM3VIO/P, Sutherland; GC3TTN/P Jersey; PA0PN; GW3UID/P in Brecon, Radnor and Montgomery; GM3XEJ/P Kinross;

GM3TSL/P Peebles; and G3SVK in the Scillies, all on SSB, with CW giving contacts with G13ALT, GC3LDH/P Jersey, GM3VGU/P (Peebles and Nairn), GW3VPL, GM3OXX, and GM3LHV.

Over at Farnborough, G3PQF missed out on a contact with your scribe, who went QRT and so did not hear his call—thus making at least three times on both sides when we have failed to connect. Table total shows a rise for Dave of 13, from 60 to 73 on SSB, with an aerial which to read the description is the weirdie to end 'em all—but, which is what matters, the darn thing works!

G2DC reckons there should soon be a strong signal on Top Band, as he overheard a rather brash young G3-plus-three enquiring at the junk stalls for an 813 base to partner the bottle he already had, as an anti-fish-fone specific! Perhaps one should explain to the laddie that the object of a VFO is to get away from the things rather than to batter a way through—but those types never learn!

As for G3VLX (Sidcup) Deryck worked five new ones, in GM3VAR (Renfrewshire), GM3BOC/A on Islay for Argyll, GW3UID/P for Brecon, GM3XEJ/P for Angus, and GM3TSL/P Peebles. However, he only goes up by four. Reason? Accidentally counted Fife in twice a few months ago!

5Z4LE helps the countries score of G3VMW (Wakefield), who now has an inverted Vee with the apex up at 75 feet in the air, to put him quite definitely into the big league. The pole is also used to hold up the vertical part of a full-sized ground-plane system on Eighty, as well.

Anyone wanting Kinross should look out for GM8HP and GM3NVU, who are going there on Saturday night October 12/13 and will have one station on SSB and one for CW. It had been hoped to write in a little earlier, but the permission to use the selected site was not obtained until just before the deadline for this issue.

GM3UVL (Glasgow) is as chatty as ever in his letter, which puts up his score to 98/96; of the two missing ones, one is Sark, which he will probably have received by the time this is out, and t'other is (still) Leicester. Bill has a rather neat way

of monitoring his cathode-keyed PA, by using three silicon diodes in series with the key; the voltage drop across these is used to power a one-transistor audio oscillator mounted right on to the key.

Events on Eighty

There are in fact very few reports of serious business on the band—as usual—but there are undoubtedly a few stations who give it attention and gain the benefit of their activities.

G3TLX managed some new countries during the WAE exercise, by way of EP2, ET3, and ZD8, as well as working stations in W, PY and 4X4. Heard was a ZC4MO with a positively enormous signal on 3505 kc, who said he was running 1 kW to a *Quad* (!)—but Ron is firmly convinced this one is not the real goods.

Over at G2DC the description of the band was rather to the point—"Punk!"—but it still yielded contacts with W1 to 4, VO1, UD6AM, and 4Z4AG.

Looking at the HF Bands

Starting at the highest frequency, there seems to be some feeling that although Ten was apparently dead, a CQ call would often deliver the goods. G2DC several times found DX stations banging out repeated calls and finding no takers. Worked were CR6GO, CR7IZ, CX4JK, LUIDEN, ZS1 to 6, ZE and 6W8XX.

G5QA (Exeter) writes in to remind us all he is still around and still as capable as ever of working the stuff; Herb comments on this "dead band through lack of activity" phenomenon, and mentions as an example calling CQ at 1800z on the evening of September 3, on an apparently deserted band, and between then and 2000 hooking ZD8, VP8, LU, and XW in return to his calls; responses have in fact been obtained from the band as late as midnight.

Another one who has been keeping an eye on 10 metres is G3PQF, who wrote in on August 31, when the band was open to W, ZS and the first-hop EU stuff—all quite mouthwatering for Dave, but sadly TV was on so G3PQF off. However, plans are afoot to take a day off when the band is showing signs of life, and do something about it.

Reporting the HF Bands

G3XAP has AM and CW at his command, and used both on 28 mc, with CX1GY and EA8DM on phone and UF6DM plus CR6GO on the key; but Phil seems to have been unlucky in the times he has been able to get on, as he castigates all the HF bands as "lousy over the whole month."

Ten as far as G3NOF was concerned definitely showed signs, and was improving rapidly during the whole period, albeit conditions were far from stable. SSB contacts were made with KV4AD, OA4ED, VP8JC, W5NMA, W5VY, W1, W2, W4, ZD8s, 4A1WS and 5Z4AA, although ZD7DI and ZD9BE got away.

G3XGT writes in from St. Annes-on-Sea to let us know how he has progressed from the first few halting steps he described some months ago. A Mosley RV4 vertical with the correct collection of radials was duly erected and driven by a Sommerkamp outfit complete with the linear. However, there are other hazards to the operation, with a deep-freeze as a back rest and the left elbow resting on the washing-machine; the whole box-of-tricks has to be covered when not actually in use. As Jeff remarks, when he has finished the shack-building exercise, the sheer luxury of being able to sit in it is bound to stimulate him into raising some rare DX! Up to now, Ten has not been particularly good, and the first DX contact of note was only a day of so before he wrote in, when 9J2BC came back with 58, and VE3BPX/W4, who was G2AZL some twenty years ago and would like contacts with the West Yorkshire area.

Fifteen Metres

Here we can kick off with G3NOF, who found the early-morning long path to Asia and Australia pretty useless apart from a few JA's around 0730, but the short path has opened up quite frequently at various times from 0730 to 1900, with VK and JA workable almost every day

between 1200 and 1300z. There have been some good openings to North and South America until the small hours. It all added up to SSB contacts with JA's, KA2LS, KA2PX, KA2VT, KG6APF, KR8EA, MP4TCF, VK1 and 2, W's including W4RNG/7 (Idaho) and W7MWR (Utah), ZS's, 9M2BO and 9M2NF. Escapers were KX6GJ and 9N1MM.

G3XGT used mainly SSB, and in this manner connected with MP4BEU, 9H1M, ZD8Z, 9M2AH, K7TQA/AM (when the latter was 23000ft. above Albany), VP8KD, and KØNEB. As far as the CW side of things were concerned we look at G3XAP, who managed to work all W call areas other than W7, MP4BGX, VE's, VP7NQ, JA1XUY, ET3USA, 9H1BA and 4X4SK, with 50 watts to a dipole.

An interesting point from G2DC who understands that during the recent CR9 DX-pedition operation, the two stations worked no less than 2000 JA's! Jack himself hooked such interesting stuff as CR7IZ, CX3BH, EP2BQ, EL2Y, HL9KQ, JA's, KX6ER, PZ1AH, PY1-8, TAØA, UD6AM, VQ8CC, VE's, VEØMD (VO1AW off FP8, where the VO gang are setting up a station), VP8JX, VU2OLK, VK's, XW8BP,

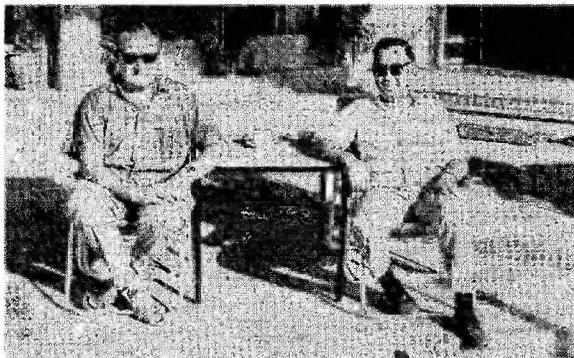
assorted W's, YV1OB, ZD5V, 6W8XX and 9Y4LA.

"A very good month" was the opinion of G3NMH in the 21 mc context, and he backs it up with some pretty solid statistics, in the way of HM4EW, HM1DX, loads of JA's, HV3SJ, VP2AW, MP4BGX, MP4MBB, VP8JP, MP4TCF, VK9WD, LX1CO, VP8KD, XW8BJ and XE3DA. Hal's trip to Iceland, where he was able to get on at TF3EA, gave him a lot of pleasure, as well as being satisfying for the U.K. stations he was able to work.

CW/DX is a forte with G3TLX, even though he does profess to be an LF-band artist some times; the 15-metre log shows, for the period we are looking at, 9G1HM, TA's, 5A1QW, VQ8CC, VP8JH, ZS6UT/MM, G6ZY/CN8/M, HL9VS, T12PZ, ZB2BO, EP2BQ, KV4CI, CR6's and 7's, 9J2DS, OA4ED, ET3USA, CN8MI, G5NX/MM near CR6, SM5WY/OY, UAØ's and assorted W/VE and JA stations.

G3AAQ/M has been rather in the wars, starting with the flooding at Rugby, when he came back to his car in the morning to find 15 inches of water in it; then a change of car which meant refitting every item of gear and going through that awful business of suppression—and now he is in the process of moving home from Kidderminster to Rugby. However, contacts were made with W's, ET3USA, JAØBUA, VQ8CC, EL2Y, ZE3JJ, CR7IZ, 9J2IE, EL2NX, 9M2US (worked from G, GM, and GW on three contacts), and VP8JH.

[over



On left, ZC4GM, who is an R.A.F. officer holding the U.K. callsign G3MCY. With him is ZC4MT, president of the Cyprus Amateur Radio Society, of which ZC4GM is honorary secretary.

Using the home station and Joystick VE5GG, 5Z4DW, FG7XC were also worked.

Fifteen, as far as G3UAN is concerned, is strictly out of bounds when the Idiot's Lantern is glowing, but after TV-time Robert worked all W call areas, JA's and FG7. G3VWC, as already remarked, has been working in a job where there is a rig on which he can play at all sorts of odd times, and by this means a JA contact was snatched at an hour when normally most of us are just thinking of going home to lunch—or something!

Only a couple of contacts are considered worthy of a mention by G2HKU, in the shape of TA1SK/2, and UA9WL. TA1 appears to be the *European* Turkey prefix, and contacts were much in demand during the WAE affair. (TA1 counts for WAE certificate purposes.)

G3DO reckons he did not do much of interest, as he spent time chasing W counties, but on SSB Doug raised 5W1AS for a new one on 15m., and K7DXP/KH6 as a matter of interest.

An SB-101 and a ground-plane is the formula used at G3VMK; and it produced CR6, CX2XA, lots of

JA's, KX6GD, various rarer varieties of UA9 and Ø, VQ8CC, all W call areas and 9U5DL.

Contests

The VK/ZL/Oceania DX Contest comes off over the weekends October 5/6, 1000 to 1000 GMT for the Phone leg, and October 12/13 for the CW section at the same times. The exchange is RS(T) plus a three-digit number starting anywhere between 001 and 100 for the first QSO and then continuing serially; scoring two points per VK/ZL contact and one for other Oceania contacts. Logs are to show date, time in GMT, call of station worked, band, serial number sent and received, and points claimed. Underline each new VK/ZL call area worked. A separate log is required for each band, and a summary sheet carrying call-sign, name and address, QSO points for each band, and VK/ZL call areas worked on each band. The all-band score will be the total QSO points *times* the sum of the VK/ZL call areas worked on all bands. A single-band entry will be total QSO points *times* number of VK/ZL call areas on that band. Entries to NZART, Box 489, Wellington, New Zealand. There is an SWL section to this contest which will be combined Phone and CW, so that a station may be claimed once on CW and once on Phone on each band. Logs, scoring, summary sheet, and so on in a form similar to the transmitters, and address for logs similarly. All entries are to arrive before January 21, 1969.

The CQ World-Wide DX Contest, Phone end, will be over the 48 hours October 26-27, and the CW event on November 23-24. All bands, Top to Ten, and the usual single-operator single and multi-band categories, plus multi-operator all-band single and multi-transmitter. Swap RS(T) plus Zone Number, e.g., 58914 for U.K. stations. QSO points: Three for a station in a different continent, one for a station in a different country in one's own continent. Contacts with own country permitted for multiplier but score *no* QSO points. Multiplier is the sum of the Zones and countries worked. Full rules and a sample of the summary sheet required appear in *CQ Magazine* for September 1968. Logs to be post-

marked not later than December 1 for the first leg and January 14 for the second, addressed to CQ Contest Committee, 14 Vanderventer Avenue, Port Washington, L.I., NY, 11050, U.S.A.

Old Faithful—Twenty Metres

This one has really improved, and is overflowing with signals of all sorts, funny noises, DX, QRM, commercial RTTY and intruders. As far as G3KFE was concerned at least once the band seemed to perk up no end when the aerial replaced the dummy load! It seems that a red lamp will have to be arranged to light up whenever the dummy is connected—it happens far too often.

G2DC worked HI8RY, HP1BR, HK4ALE, OA4ED, VP2AZ, VP9BY, VK1SG (who said he is often on in the mornings from 0700 to 0900 our time looking for G stations and rarely finding them), 7Q7AM, 8P6AE and 9Y4LA.

That Vanguard at G8HX has been, as already remarked, hooked to the Top Band wire for use on the HF Bands. Frank's first outing on Twenty for years gave him the pleasure of contacts on CW with W, VE, JA, VK, ZL and so on, for proof that the maestro has not lost the touch.

All in all, a pretty busy month for G3WJS at Halstead, doing such things as digging earths, hanging up the aerials and so on, but the main problem was the mending of the big transmitter, which had to be deferred to last in the programme, so that only four days were available for it to be used; these yielded W's, PY, YV4OY, OY6FRA, DL7NP /OHØ and DL7NS/OHØ.

That daily sked which G5QA runs with ZL2OU on Twenty has lasted now for thirty-two years and well over 7000 contacts—which makes the start well before a lot of our DX hounds were even born, let alone licensed! And we might add that G5QA, apart from being a very distinguished OT who has always put back into the hobby far more than ever he could take out, is also an extremely able operator and knows all that is involved in the processes of DX working, on phone and CW.

Possibly the most noticeable thing about the conditions as far as G3NOF was concerned, in the 20m.

TOP BAND LADDER

(G3V-- and G3W-- stations only)

Stations	Counties	Countries
G3VMW	97	21
G3VGR	94	16
G3VYF	92	19
G3WUD	88	14
G3VLX	85	10
G3WQQ	87	16
G3WDW	83	9
G3WPO	82	18
GW3VPL	82	17
G3VLT	80	16
G13WSS	76	10
G3VMK	74	17
G3VMQ	73	16
G3VES	63	16
G3VOK	61	15
G3WJS	49	7
G3VPS	48	13
G3VWC	40	8

context, was the noticeable lack of the Pacific stations in the early mornings. Don wondered for a time whether it was a case of coming on too late, but the presence of VR6TC at S9 at 0700z rather points to lack of activity as the cause. Contacts made included DU1HR, FP0DM, FP0MD, HM1BK, KH6BVS, KH6BX, KL7BIL, KL7EBK, KR6SG, KV4CF, MP4BGU, OA4AAK, SV0WN, VK's, VP8FL, VP8KD, WB4IRT/AM near Crete, W0VXO/KV4, ZE1AB, ZL's, ZS's, 3V8AA, 4X4's, 8P6CC, 9G1BF, 9G1GD, 9K2CC, 9M2PO, 9M2TC, 9V1NV and 9X5AA. Don missed out on KC4USV, VK9XI, VR6TC and VS6DR.

Among the souvenirs of his first few weeks of operation, G3XGT mentions F9UC/FC, PX1JI, M1B, and some 4X4's.

That 50 watts and dipole which G3XAP runs is not so often heard on Twenty, which band Phil dislikes because it is such a ratrace—fair enough comment, of course, but it is the band on which the greater part of our DX communication is, was, and will be for the foreseeable

future, carried, so we are to some extent at least, stuck with the situation. Thus, as Phil spent little time on the band he came out with little, apart from all W call areas less 5, 6, and 7, plus some PY's.

Another sked with ZL is the one between G2HKU and ZL2KP, which has now been resumed but is definitely hard going. Other SSB contacts were ZL3SE, ZL2KP, ZL3JQ, VK3AYI, VK3XB, and VP5CB, for whom the cards should go to the home call K3NAU.

A little CW operation by G3VWC resulted in contacts with 3V8AA, F2WS/FC, ZB2AG, and TA2SC. The same mode was used by G3VMK (Watford) to raise FG7XC, HL9KQ, HM1AP, JA's, KH6, KL7, KP4, KS6CX, KV4CI, LU, PY, TA, UD6, UF6, UG6, UH8CS, UI8KAA, UA0, UM8, UL7, VE, many VK's, all W call areas, YV, many ZL's, 3V8AA, 9A1, 9J2 and 9V1OS.

Let the CW chaps round off the story, in the person of G3TLX, who offers VP8JX, and VP8JH, EA9EQ, JW2AP, 3V8AA, PJ2VD, KV4CI, YV5CKR, JA's, VK's, and

ZL's.

If you hear, or work, G3BID /LX/M any time during October 13-20, it will be our old friend G3BID on his travels again. He expects also to be signing PA9BID and ON8ID at other times up to October 25.

And that is about it, save possibly to remark on a recent visitor at G3IDG (Basingstoke) who is active on the air with a G3 W-- call. On being shown the shack he enquired what sort of a receiver this was as he had not seen one before. An amateur who has never seen an HRO must be nigh on unique! See you all next time, with news and views and what-have-you, the deadline being October 7, addressed to CDXN, SHORT WAVE MAGAZINE, BUCKINGHAM. Till then, 73, and thanks for all the mail for this issue.

Editorial Note: Closing dates for CDXN in the next few issues will be November 11, December 7 and January 13, 1969. It is essential to meet these dates to ensure coverage in the feature.

SOME ZL FACTS AND FIGURES

As usual, the June issue of *Break-In*, published by the New Zealand Association of Radio Transmitters, is their Call Book number, with general information on ZL licensing and NZART services. The ZL's are divided into four radio districts, prefixed ZL1, ZL2, ZL3, ZL4, with ZL5 (Antarctica) and ZK1 (Cook Islands). The licensed amateur population of each district is approximately as follows: ZL1, 1520 AT-stations; ZL2, 1360; ZL3, 680; and ZL4, 340—a total of 3900 AT-stations in New Zealand, with another 15 or so licensed in ZL5 and ZK1.

The ZL's have a form of limited-facility licence, whereby those who have not passed a 15 w.p.m. Morse test or have had less than a year's experience on 80m. (with 50 contacts logged) are restricted to certain frequency areas in the LF and VHF bands. The next stage is what is known as the High-Frequency Permit, for unrestricted operation on all regular amateur bands. The ZL frequency allocations show some differences from ours (they are in Region III of the I.T.U.), the chief of these being that their Top Band area is 1875-1900 kc, and on 80m. their allowance is the full 3500-3900 kc, which is 100 kc more than we have and in line with the U.S. allocation—and they also have a very useful band at 51-53 mc (six metres), which has positive DX potential under the right conditions. They have a band at 26.96-27.32 mc, though no reports ever come out as to operation or results on this special

allocation. The ZL's have no 4-metre (70 mc) band, but for two metres their allowance is 144-148 mc. Except for some minor variations at UHF, in all other respects the ZL band allocations are on the international basis—which makes them the same as ours.

OBITUARY

We very much regret to have to record the passing of the following radio amateurs:

—G2BSA, Douglas Clague, of Looe, Cornwall, president of the Radio Amateur Invalid & Bedfast Club, in which he took a great personal interest. He was a well known Cornish amateur who had been licensed for more than 30 years.

—G2CZM, Arthur Pruden, of Chesham, Bucks., at the early age of 47. His special interests were /P and /M on the LF bands, though latterly he also operated HF/SSB and on VHF.

—GW3GO, Sidney Waters, of Porthcawl, South Wales, at the age of 64. In the 1930's he started a successful radio-relay business in the Kenfig Hill district, from which he retired in 1964. He was licensed in 1936, and was well known on the South Wales air.

Our sympathies are offered to the family, relatives and friends of G2BSA, G2CZM and GW3GO.

VHF BANDS

A. H. DORMER, G3DAH

BY and large, not a bad month for DX. The good conditions over August 9-10 were followed by the doldrums until the 18th, when propagation to the South revived, many French stations coming through in the early evening at good strength. Some PAØ's were also audible, but at poor QRK. Pressures during the week rose unsteadily from 1010 to 1020 mB and remained in that region until the 24th, when an increase to 1030 mB was observed, persisting until the 27th. From then on, there was a steady decline down to 1000 mB which did not augur too well for the VHF field day but, fortunately, there was a rise to nearly 1030 mB again just before the weekend of September 6-7 and good tropospheric conditions lasted throughout the contest. There was little evidence of any extended tropo., although some contacts were made at over the 800 km mark at widely separated time intervals. Some auroral activity was reported from Holland, and PAØHVA made two contacts with SM under Ar conditions but no G operator appears to have been able to take advantage of it.

The East/West path was good over August 21-22 with G3GZG (Redruth) and G8BCE (Yeovil) at well over the S9 mark for hours on

end. The 23rd saw more good Continental DX with PAØ and DJ/DL at very good strength. The French and German beacons were both at RST 549 and GB3CTC and GB3GW at RST 549 over this period.

The DX axis shifted to the North by August 25, with G8BMP (Cannock) and G4JJ/A and G8AUE in Derbyshire being among the best signals. By midnight on that day, beacons GB3GM and GB3ANG were both coming through, the latter at RST 599+, and GM5YK/A was worked from Herne Bay on AM at RS-59. No other GM's were heard, and indeed nothing further North than Lancashire. It is still puzzling why so often one hears reports of the reception of the Dundee beacon and yet there appears to be no other Scottish activity on the two-metre band.

Only average conditions prevailed until September 7, when once again PAØ's were very good in the mid-morning. From then on, VHF NFD was under way, and conditions during that event are elaborated below.

VHF NFD

It is too early to do more than give a few preliminary impressions of VHF National Field Day (also the Region I IARU event) but by next month some detailed information should be available and a better assessment can then be made of the situation generally. However, one aspect of universal interest is that propagation conditions on both Two and 70 cm. were reasonable, if not outstanding. There did not appear to be any opening to Scandinavia but long-distance contacts into the South of France were made, and PAØ and DJ/DL signals were at very good strength for most of the time. Pressure had built up very slowly during the days preceding the Contest, and by the Saturday morning was beginning to drop from the 1028 mB registering in the South, as weak low pressure areas came in from the West. The drop was not significant, though, and both weather and propagation remained good over the weekend. It must have been with a sigh of relief that many /P operators were able to fold their tents on Sunday evening without having been rained

out and their antennae brought down, as had happened in many cases during the 1966 and 1967 events. Clear skies the previous night and mist and fog patches early on the Saturday morning gave positive indications that conditions would probably be good. With the necessary temperature and humidity parameters present, and from the comments being made on the band on the Saturday afternoon before starting time, operators seemed to be in high spirits.

The start of the Contest preceded by one hour the opening of the IARU Region I event, and it was only by then that activity built up to a really high level. The impression is that there were many more stations on than in previous years, a very welcome sign after the flagging interest for contests shown by the analyses of other such events during the early part of the year. Whether it just happened that way, or whether previous offenders had taken to heart comments made in this column, it is pleasing to record that there appeared to be very little out-of-zone working on phone at the LF end of the band, although two transgressors were logged and deliberately not worked. One had incredibly badly over-modulated signals, the spread being of the order of 50 kc on either side of the carrier for a 45 dB over-noise signal, and speech was unintelligible at times. Several DC to DC transistorised power supplies appeared also to be giving trouble, although filtering at the multi-vib. frequency should be a simpler matter than at 50 cycles.

Welcome was the appearance of SSB signals on two metres from /P locations. GW3BA/P from Montgomery, and GW3OHC/P from Radnor, were both putting out unexceptionable signals, and the idea of coming up on the SSB international calling channel every hour on the hour for ten minutes or so seemed to work out very well, since both these stations were giving serial numbers over the 200 mark towards the end, and both were heard working British and Continental stations using this mode at these times. The initiative shown by G3BA in pioneering this practice certainly paid dividends in both an increase in the number of contacts

and the time saved by concentrating SSB operation into shorter, productive periods. It appears though, that it will be necessary to make rather more explicit the power limitations specified for this Contest where the same linear amplifier is being used for SSB, CW and AM! The time-honoured "25 watts maximum DC input to any stage" is no longer capable of unambiguous interpretation.

Operating procedures and manners were generally of a high standard, but a great deal of time is still being wasted by the exchange of unnecessary pleasantries, not in the main by participants themselves, but by others who had to be asked for the required information instead of proffering it immediately and who, in some cases, then went into lengthy descriptions of the rig, the prevailing weather, comments on conditions and the fact that they had only come on to give the others a few points. All very interesting *outside* a Contest! Old hands at the contest game were using abbreviated procedure and break-in operation to advantage, others were going through the whole rigmarole of full call signs on each over, and the whole nausea of "standing by for" and "returning to," etc. Although the rules for both VHF NFD and the Region 1 contests did not require the exchange of both QRA and QTH, many operators were still giving both. This was not the case in so far as Continental contacts were concerned, the language difficulty being one factor and the widespread adoption of the QRA Locator another. This latter is still the speediest way of exchanging location information with the required accuracy and, unless the rules specify the scoring to be done on the basis of points per kilometre, does make the compilation and checking of logs very much easier. Gabbled call signs without the use of phonetics were also a time-waster — one *never* heard the leading scorers doing *that!*

CW operation was apparently not very popular, understandably so in view of the time that it can take to complete a contact in this mode, but some worth-while DX contacts were possible, notably with HB9AGG/P, who was also active on SSB but difficult to work through the wall

of PA0/DJ phone; F0KP/P on the Swiss border, whose AM and SSB was only RS 55 in the South on the Saturday morning, was also available.

It was interesting to note that several of the leading stations were not using VFO control, though they were probably equipped with it, and this raises the question whether a VFO is an advantage in this type of contest. The answer is probably yes-and-no. Yes, if there is much SSB and CW operation contemplated, and No if transmission is to be on AM only. Even this broad division needs some modification, in that the position will change depending on the QTH and whether likely contacts already know the usual operating frequency. Taking G2JF as an example, his signal is so good over most of Europe, and he is so active on the two-metre band, that most operators know where to look for him. Jim's operating technique has been suitably modified to suit this fact and he rarely calls a station, but calls CQ and waits for the answers. His VFO was not used at all during the contest, yet he knocked up 340 contacts. This is a unique situation however, and for we lesser mortals with lower output and poorer sites, there may well be occasions when a shift in frequency is not only desirable but necessary to avoid local QRM. In a contest of this length there will rarely be any need to QSY up and down and band to catch a station announcing "low to high" and *vice versa*.

While on the subject of VFO control, it does seem that VFO's are getting unnecessarily complicated in the search for ultimate stability. Surely, all that is required is that one builds a reasonably stable VFO at low frequency, mixes it with the xtal oscillator to come out on Two and that is it. The requirement need be no more than that the VFO remains within say, two kc during any normal-length AM QSO. It must of course be capable of being keyed without chirp, and the requirements for SSB are very much more stringent.

Getting back to the Contest, it is too early to get much detailed comment from competitors, but the following snippets may be of interest: F9NJ made it with GM, twice.

PA0HVA had 20 SM contacts, of which two were by Aurora late on the Saturday night/Sunday morning. (Did any one else notice any Auroral activity?). Operating SSB only, he made nearly 55,000 points from 206 contacts, an average of 255 km per contact. F9FT booked in 183 contacts including 52 PA0, 43 DJ/DL, 58 F, one LX, three GW and three HB9, for an average of 287 km per QSO. GW3BA/P made 224 contacts, G3VER 140, GW3OHC/P 235 and GW3NUE/P over 230. ON4KJ/A finished with 281. G2JF recorded 340 different stations worked, including 68 PA0, 34 DJ/DL, 20 ON4, 102 F, 104 G and 12 GW, his entry being for the IARU Region 1 Contest only. Total points were 90,057 and average distance per QSO 263 km, his best DX being F9NL at 880 km and F9BP/P at the same range. An interesting contact was with F1CV/P who was only 40 km from the *Italian* border.

By and large, then, an enjoyable contest with conditions and weather to suit.

VHFCC Awards

The Certificates for the VHFCC Award will shortly be available, and applicants will be asked to produce the necessary QSL cards for verification purposes. Claims are acknowledged from G8AWO and G8AAZ; the latter has already submitted a claim for 70 cm and is the first operator to have entered for both bands.

News Items

An encouraging story of some nice DX worked by a newcomer to the VHF/UHF bands: G8BGQ (Rickmansworth) runs nine watts input to a QQV03-10, plate-and-screen modulated with 6L6's in Class-AB1, to an 8-ele Yagi at 41 feet, but he got a very nice RS-59 report from F9NL in the Pyrénées on August 19. In response to a request for the French station to listen on 432 mc, back came a 55 on that band. (Unfortunately, F9NL is not at the moment equipped to transmit on 70 cm.).

The G8BGQ equipment on 432 mc is a QQV06-40A tripler running about 15 watts input and, according to Keith (who may be a little modest in his assessment of his ability to

construct an efficient output stage) gives an output of about one watt. The aerial for 432 mc is a ten-element Skybeam at 45 feet. This 70-centimetre result was followed up within the next two days by contacts with F1YS in "CI 24h" and F1EJ/P in Portarlier, both QSO's being the result of a CQ call. Mid-morning on August 22 also produced a second QSO with F1YS and a call from F1ABI/P on the Franco-Spanish border, when 5 & 9 reports were exchanged. The 432 mc path to F9NL was even better on this day, signals being some 6 dB up.

The 2m. converter at G8BGQ uses a 6J6 cascode front end, 6J6 mixer and an AR88 as IF/AF strip. The 70 cm converter is a BF180/2N3819 combination. A TIS-88 model is under construction and eventually the Tx should run 120 watts of NBFM on Two and, with a QQV06-40A final, considerably more than one watt of RF out on 432 mc. So here is some very useful DX on very simple gear, and while not a record distance, is very satisfying—congratulations!

Herb Bartlett, G5QA (Exeter), well remembered for his work on five metres before the War, is still active, on the 144, 432 and 1296 mc bands. He puts in a strong plea for greater activity in the two upper VHF bands, warning that we may well be on the way to losing even more of our space if we do not justify it by greater use. He advocates the establishment of more regular skeds on 432 and 1296 mc as being one way of achieving this. He used to run a regular, thrice-weekly, sked with GW3ATM and G8AIL. This yielded some very interesting results for the participants and as well as being valuable to non-participants as an indication of prevailing conditions.

More news of 432 and 144 mc activity in Scotland. GM3ULP (Motherwell) is on phone and CW on two metres and, as GM6ADR/T, is very keen to make skeds on the higher band with other amateurs within the possible service area. His equipment on Two takes 12 watts to a TW-2 with an 8-ele beam at 40 feet and a JXK converter. On 70 cm. the transmitter runs five watts peak-white, modulation being *via* a home-brew modulator and pattern generator. The

surrounding terrain is such that only operators in Lanarkshire should apply for skeds! Daily schedules are run on Two in the Glasgow area. GM3ULP is *QTHR*.

Micky Morrissey, GM5YK (Cruden Bay, Aberdeen), also comes in with news from the North. Apart from his own two-metre activity, the Buckie group are well equipped for this band and operate during contests with the call GM3WML/P or GM8AZS/P. Others to be heard regularly on Two are GM3UAG, GM3JFG, GM2DRD, GM3OEJ, GM8BNH, GM8AGK and GM8BQY. G8ANQ (Whitby, Yorks.) is a consistently good signal into Cruden Bay, a distance of some 200 miles, and seldom are conditions so poor that a QSO cannot be made, so there is hope for the Southerners yet. Be it noted though, that apart from 30 miles or so, this is an all-over-sea path. One of the keenest and most active stations on Two in the area is GM3GUI (Frickheim, Angus) who, with no site advantage at all, put up a very fine performance on the band.

The GM5YK/G3DAH contact of August 25/26 took place at 0020z and bears out the contention that much good VHF/DX is available in the wee small hours if one has the patience to sit up for it and can find an obligingly late bird at the far end. On that particular night conditions to the North of England had been good, many contacts being made with stations over the 200-mile mark, but towards midnight activity (and the upper atmosphere) cooled off. The Dundee beacon was RST 599 and Thurso RST 559, which looked encouraging—but not a GM to be heard although G8BBY (Southport) was worked at 5 & 9 both ways shortly after midnight. Then out of the blue came the call from GM5YK and an RS-59 contact resulted, only some weak fading being experienced throughout.

That upper-air cooling is an important factor in long-distance communication at these frequencies and has been mentioned in this column before in relation to early-morning skeds; obviously the cooling in the late evening has a similar effect. It is noticeable also that propagation seems to peak appreciably just after rain. Bearing in

mind the importance of temperature and pressure gradients, and the fact that the greatest temperature changes take place near ground level, this is understandable.

The Gatow Radio and Electronics Club is now active on two metres and on the look-out for U.K. stations. Callsign is DL5XP and equipment is available for SSB, AM and CW. This is an interesting one because DL5XP is the only Allied station active from West Berlin on Two. Address for skeds is: The Station Manager, DL5YZ, R.A.F. Gatow, B.F.P.O., 45.

G2AIW (Twickenham) is putting out a very good signal with his one watt of NBFM. He now has an 8/8 at 40 feet and was able to raise PAØJEM, to bring his countries-worked up to four and the counties to 29.

* * *

TF3EA (Reykjavik, Iceland) is now licensed for 70-25 mc with an input of 25 watts. He is busy collecting gear together and hopes to be active in the near future. This is a very interesting path over a similar distance to Manchester-Gibraltar, but propagation would be *via* Auroral Es. Optimum period for U.K./Iceland contacts on Four is about 2000-0200z with the peak during June and July, but the fall-off would be much more gradual than over the G/ZB2 path. There may, therefore, be some openings even this month. For reference purposes, it may be noted that the number of hours of openings over a similar path (Fargo in North Dakota to Churchill in Manitoba) averages 219 per year. This Iceland/U.K. opportunity is a definite starter and will be worked with patience and given the same amount of interest and attention as the ZB2 project has aroused. G3JVL has supplied a precision oscillator for the TF3 end, and liaison for skeds is on 14-260 mc, with G3GYM the controller at the U.K. end. Once TF3EA is active, it should be possible to get some Meteor Scatter contacts at this range.

G3MCS (Aylesbury, Bucks) has found himself a new site for 13-centimetre operation at Inkpen Beacon, 11 km south-west of Newbury, at "ZL53d," and was on from there during VHF NFD,

during which he made two contacts—one of these, with G2RD/P at Brighton, looks like a record at 110 km. The other with G3TUX/P at Brill was at 50 kilometres. Receive-frequency on this band is 2304 mc, xtal controlled and the Tx feeds a 2ft. diameter solid dish with waveguide excitation.

A good and unusual signal on two-metre SSB is now being radiated by G3KTU/M (Beeston, Notts). He was heard from Daventry while on his way home from a Mobile Rally, at 5 & 7 signal, and was worked from Banbury at about the same strength.

G3VFC (Rainham, Kent) and G8AYC (Gillingham) are both pressing on with video equipment. G3VFC already has a picture going out with 40 watts peak-white, under call G6ADK/T, to an 18-ele Parabeam and G3AYC has a transmitter under construction with a pair of 4X150's. Skeds and reports will be welcomed.

G8ARC, the Addiscombe Radio Club, mounted an expedition to Rutland over August 25/26 and so gave many two-metre stations their first contact with that rare country. The gear consisted of a "Hamobile" with an SEO receiver to a 6/6 antenna and their signal in the South was well over the S9 mark for most of the time they were there.

* * *

Many must by now have heard the excellent NBFM transmission from G8AMD (Sutton Coldfield) and have wondered what system was in use. The answer is that Hayden has modified his KW-2000 by inserting carrier at the appropriate level and applying good-quality audio from a high-Fi modulator to the varicap diode in the IRT circuit, all very simple, and, as measurements showed that the capacity swing of the diode was linear over 4,000 cycles, very effective. Incidentally, G8AMD is keeping a very close watch with a recording barograph and a pen recorder on the differences in the received strength of the Wrotham Beacon under varying met. conditions and is fast becoming able to predict good propagation periods. While few amateurs will possess such elaborate equipment, much can be done to good effect with the aid of an ordinary barometer and the

THREE-BAND ANNUAL VHF TABLE

January to December, 1968

Station	FOUR METRES		TWO METRES		70 CENTIMETRES		TOTAL pts.
	Counties	Countries	Counties	Countries	Counties	Countries	
G3LAS	39	5	51	14	10	1	120
G8BBB	—	—	53	13	32	6	104
G3DAH	23	2	49	13	10	1	98
G3COJ	8	3	41	8	18	3	81
EI6AS	17	7	32	6	—	—	62
G8AAZ	—	—	34	6	16	1	57
G3FIJ	3	1	16	3	17	2	42
G8BNR	—	—	35	6	—	—	41
G3AHB	—	—	24	5	7	2	38
G8BJK	—	—	32	6	—	—	38
G8AUN	—	—	26	8	—	—	34
G8APJ	—	—	20	4	2	1	27
G3FXW	—	—	5	2	11	2	20
G8AYN	—	—	13	1	5	1	20

Scores are from January to December. Position overall is shown by the total in the last column. Scores for individual bands will be summarised from time to time to show positions. Entries may be made for a single band, any two or all three. Claims should be sent in as often as possible to enable the Table to be kept up-to-date.

weather charts in the daily newspapers.

G3PMX (Chelmsford) should now be heard more regularly on the two-metre band as he has finally got his DXCC and WAS on the HF bands and so can now devote more time to VHF operation! However, he does not feel that the present QTH is good enough for serious VHF/UHF work, and a change is in view. There are now eighteen stations active on VHF in the Chelmsford area.

G8AZU (Sunbury-on-Thames), running 700 milliwatts to a 346A, has now made 118 contacts on Two with his flea-power rig. Beam is an 8-ele Yagi at a site only 20 feet a.s.l. G8ATK (Yateley) is the first G8/3 claimant for the VHFCC Award on two metres. He has now worked 225 stations on two metres and is shortly moving to a better QTH in Farnham, Surrey, from whence he hopes to get some really good DX.

* * *

Always with an eye open for a possible Aurora, the high level of

solar noise during August 17-18 was followed very carefully. Peaks were 20 dB over noise, dropping to 10 dB over during the next three days—but there was no evidence of any auroral effect on two or four metres. There was an Auroral opening to the North on August 31, when GB3GM (Thurso) was heard at 57A by G3WBQ and G3TCT. This beacon was recorded at G3DAH at RST-559, and GB3ANG was RST-599 just after midnight on August 25, but this was straightforward tropospheric propagation. Can anyone add anything about Ar activity around that time?

There have been some more ZB2VHF openings during the month. On August 11, signals were peaking S9 between 0640 and 0656z and were again audible between 0829 and 0833 and 1759-1802z the same day. On the morning of August 12, signals from Gibraltar were again heard by G3JVL and G3PLX, and on August 29 by G3GVM, G3JHM, G3UFS and G3DEL, when the QRK was up to S8. There was also a Es opening to the East and North on August 31, with no less

than ten BC stations audible. There was no sign of any amateur activity although GB3GM was taped at G3WBO and G3TCT at 55A. On September 2, ZB2VHF was there again at RST-599+ between 0838 and 0900z. On September 8 at 1645, GB3GM was heard on the South Coast via Aurora at 55/7A.

For those who use a KW-2000 to produce the sideband for a two-metre transverter, G3BA offers a useful tip. If transceiver and transverter are in close proximity, there is a strong probability that there will be some feedback through the audio circuits in the KW, annoyingly audible as chatter in the loudspeaker. A simple cure is to lift the earthed end of the 100 μ F by-pass capacitor in the microphone input circuit and connect it directly to the cathode pin of the first audio stage—straight across the valveholder, in fact. This will remove the chatter entirely.

G3LLE (Sheffield), a very well known signal in the South, and obviously also in the North, has a heavy constructional programme in hand which will still further enhance his operations on the VHF bands. He is rebuilding the 70 cm. rig, developing a transistor converter for Four, and planning a mainly-transistor SSB transmitter for Two. With G3JON and G3NEO, Keith is among the most active of the Sheffield stations and has been the source of many a 70 cm. "first" for Southerners.

G6FO (Maids Moreton, Bucks.) and G3DAH (Herne Bay) were surprised to find, during recent crossband contacts on 80/2 metres, that signals on the higher frequency were superior to those on Eighty by a factor of about three to one, although pressures and temperatures were low at the time. This seemed odd over a 100-mile path, and further QSO's were planned to see if this is regularly the case over their distance. Information on regular skeds of this type over comparative distances would be interesting.

G8BJP/MM (Westgate, Kent) has been off on his travels again in the yacht *Witchcraft*—this time up to Pin Mill outside Ipswich—and has been having some good DX using a TW Communicator with a halo on the mizzen. The story of his recent trip to Holland is being published separately.

We are not the only sufferers from the misuse of the CW portion of the two-metre band by AM stations. During recent good openings, DX working in the Amsterdam area was badly affected by a /M touring the streets using this mode at the LF end—and by other stations using *long-playing records* as a means of checking their modulation! Disc or tape recordings for modulation checking purposes is permitted by the terms of the Dutch licence, but is, of course, strictly taboo here—and this must be construed also to mean that having the TV and/or radio on in the next room while the mike is open is also *out!*

For the EME and MS devotees, a useful sked is run every Wednesday evening on 14-200 mc between F9FT, SV1AB and OK2WCG, who discuss conditions and progress. Interested stations are invited to join the party. In addition, there is a daily sked at 1630z on 144.1 mc between these stations, during which one transmits while the others follow at five-minute intervals. SV1AB begins, followed by OK2WCG while F9FT calls, followed by OK2WCG and so on until 1700z.

Another useful check on propagation is provided by the regular news broadcast from LX1SIT, using SSB on 144-152 mc. Time is 1915 MET every Tuesday evening.

The GW3WUW/P operation went off very well, with good signals recorded in the south-east from their locations in Radnor, Brecon, Montgomery, Merioneth and Carmarthen. Operators, apart from G3WUW himself, were G3UID, G3XIQ and G3XCK. Gear on two metres consisted of a modified Pye Vanguard with a QQV03-20A in the final running 25 watts, and a transistor modulator and inverter. A Command Rx gave an IF at 4-6 mc. Antenna was an eight-element beam at 20 feet. A Honda E-300 generator ran the lights and charged the batteries. The expedition reports that time-keeping on sked was excellent, and QSO's recorded were as follows: *Brecon*, 51; *Radnor*, 71; *Montgomery*, 57; *Merioneth*, 2 (both GW); *Cardigan*, 10; and *Carmarthen*, 25. QSL's are being sent via bureau.

G3TLB (Tunbridge Wells) has been having some good contacts with his small transmitter running 5 milliwatts to an AF114, and would

welcome reception reports. He has a high power rig under construction which will run 100 watts or so with a KT88 modulator—quite a different thing!

It is regretted that an error crept in with the information about the 23-centimetre activity at G8AUE last month. The transistor converter is based on a design by G3HBW and not as stated.

Just as this was going to press, an interesting report came in from EA4AO, regarding the EA4JZ operation from Asturias, near Gijon, about 200 km west of Santander (from where EA1CB and EA1CP are working). Between them, these EA's have heard many more U.K. stations on two metres than they have been able to QSO—EA4AO says that openings between northern Spain and England are much more frequent than might be supposed, especially across the sea path to south-west England. Among G's mentioned, heard or worked are G3COJ, G3GZJ and G8ADT. The EA's, who have QSO'd many F's, are able to work CW, AM or SSB—whereas it is reported that some of the French stations are using simplified transistor receivers so primitive that they can copy neither SSB nor CW!

EA4AO (Madrid) is himself on MS sked with SV1AB—they heard one another over their 2,250 km path on August 13 (*Perseids* shower) between 0415 and 0435z but no actual QSO resulted.

And finally, it seems that the *ARTOB* balloon, on which we stop-pressed in this space last time, was never lofted after all. Reasons not known at moment of writing, but no doubt it was weather.

The Knokke group held their fourth international convention over the weekend of Sept. 14-15 and it was again a great success. Among the 350 radio amateurs and their guests who attended were 42 PAØ's, 11 F's, ten DJ/DL's, six W's, and one each from SP, I and YU. The U.K. was represented by the following: G3MP, G3KZI, G2DHV, G3PAI, G3NBP, G5DQ, G3NMR, G3KDL, G2GM and G3DAH (representing SHORT WAVE MAGAZINE).

Attractions included a formal dinner on the Friday evening, technical lectures on the Saturday,

followed by a dance in the "Weinstube," and on Sunday 15th a two-metre fox hunt (or VHF/DF event) took place, with a wide range of prizes.

Plans are already in hand for a repeat in September next year, and

further information will be given in the *Magazine* in due course. We hope to report this year's event in greater detail in a later issue.

Deadline

For the November issue, we

need your reports, claims and comments by **Saturday, October 5**, latest. Address is "VHF Bands," SHORT WAVE MAGAZINE, BUCKINGHAM. Cheers for now, and 73 de G3DAH.

MAGAZINE CLUB CONTEST

The 23rd annual Top Band Inter-Culb Contest, MCC, takes place this year during the weekend November 9/10. Rules appear on pp. 505, 506 of this issue. As in previous years, we hope that many single-operator non-Club stations will be on to give the vital one-point QSO's that, eventually, help to sort out the leading Club stations. Their check logs, with comments on the Contest, will also be appreciated and credited.

NEW M.O.S. TRANSISTOR TO GIVE MORE POWER

Investigation by Associated Semiconductors, Ltd., of Wembley (a joint Mullard/G.E.C. concern responsible for the development and manufacture of Mullard semiconductors) has resulted in the appearance of a high-power m.o.s. transistor for broadband HF transmitters operating in the range 2-30 mc. It has a peak envelope power output of 30w. at an efficiency of 50%, and is the latest advance in solid-state devices for linear amplifiers in SSB transmitters. Work so far suggests that the m.o.s. transistor is particularly suited to single side-band amplifiers. Its output current is proportional to the square of the input voltage and, consequently, the level of odd-order intermodulation products is low. In contrast to the bipolar transistor, an m.o.s. device is thermally stable and requires no complex bias circuit to prevent thermal runaway. The m.o.s. transistor has the advantage of a higher input impedance than a bipolar device and also requires an exceedingly low gate or drive current. By means of a special construction, feedback capacitance is minimised and stable performance can be maintained over a wide frequency range. The ultimate objective is a transistor capable of more than 100 watts p.e.p. for use in an untuned broadband amplifier giving output over the communication frequencies 2-30 mc.

MODIFICATIONS TO THE MARK I RADIO-TELESCOPE AT JODRELL BANK

The Science Research Council announces a grant of £400,000 to Manchester University to meet the cost of repairs and engineering modifications to the University's Mark I radio-telescope at Jodrell Bank, Cheshire. This work will extend the useful life of the Telescope and will enable the present research programmes to be continued and expanded.

The Mark I 250ft. steerable radio-telescope came into operation in the autumn of 1957, and has

worked almost continuously since that time. There have been no major breakdowns. However, in recent years the dangers of fatigue failure and of serious wear of the azimuth turntable have become greater. In the autumn of 1967 fatigue cracks appeared in the cones carrying the 800-ton bowl to the trunnions on the tower structures, and remedial action is urgently needed.

The Mark I is still the largest fully steerable radio-telescope in use in the world, and is likely to remain so for some years. During the ten years since its commissioning it has been used individually and in association with other radio telescopes at Jodrell Bank and R.R.E., Malvern, in a number of research projects, which have helped to clarify understanding of the early history and evolution of the Universe, of the stars, galaxies and planetary system. A small proportion of time has also been given over to the tracking of Russian and American space probes. Recent developments in radio astronomy have shown the importance of further investigations in the present wavelength range of the Mark I, that is 21 cm and above. However, it is expected that the proposed repairs and modifications will also result in a significant improvement in the performance of the telescope at shorter wavelengths, yielding full theoretical efficiency in the 18-21 cm range and efficient operation at still lower wavelengths in the central portion of the bowl.

EASY BAND CHANGING

A new multi-antenna switch which enables up to three separate aerial systems to be connected in turn to a transmitter or receiver is manufactured and marketed by K.W. Electronics of Dartford. Suitable for Amateur Radio purposes, marine applications and for use with radio-telephone equipment, the unit comprises a single-pole three-position heavy duty rotary switch with ceramic insulation. Rated 1 kW p.e.p., the K.W. Antenna Switch makes for a neat installation, enabling loose feeders to be permanently connected and allowing quick and easy band changes. Price for this switch is 60s., direct from K.W. Electronics, 1 Heath Street, Dartford, Kent.

ANNUAL SPILSBY JUNK SALE

Not really a junk sale, but an opportunity to acquire (or get rid of) good gear at fair prices, this annual event will be held on Friday, October 18, 7.00 p.m., at the Bull Hotel, Halton Road, Spilsby, Lincs. For details and further information, contact L. J. Coupland, G2BQC, 117 Burgh Road, Skegness, Lincs.

THE MONTH WITH THE CLUBS

By "Club Secretary"

(Deadline for November Issue: October 4)

(Please address all reports for this feature to "Club Secretary," Editorial Dept., SHORT WAVE MAGAZINE, Buckingham.)

ONCE again we are back to the time when the rules for MCC grace this feature—see pp.505-507. In essentials they are the same as ever—after 23 years we seem to have struck on a formula which gives all areas of the country a (reasonably) equal opportunity of scooping the pool. Since we know that many Club groups use MCC as a forcing-ground for good CW contest operators, the form of the exchange—RST plus a code group—is intended to make operators proficient in reading and logging such combinations while keeping the length of the exchange the same for all groups. There are a few clubs where the code commences with a number—who all have numbers at the beginning of their name, as the list shows.

We have made no provision for multi-station entries in this first list, so if you want to enter a "B" station write in, *pronto*, for a code. Likewise, if your group seriously intends to enter but is not included in the list, let us know right away. If necessary, an additional List of Identifications will appear in the November issue, for which we should have entries right away.

Burslem (now the North Staffs Amateur Radio Society), last year's winners, have signified their intention of defending their title.

The Current News

Now, to the reports, and in this context it is a sobering thought that 231 different Club groups have been reported in this feature over the thirty months or so that your conductor has been compiling it. Knowing there are quite a few who never write in, makes one wonder just how many radio groups there are in the U.K.?

Straight through the clip this month, and first to **Cray Valley**, who have the first Thursday in the month at Eltham Congregational Church Hall, 1 Court Road, Eltham, and the third Thursday for a natter session at All Saints Church Hall, Bercta Road, New Eltham; this means the October dates would be 3rd and 17th.

The same dates are down for **Stevenage**, oddly enough, namely October 3 and 17; the former will see them all looking at Laser Beams, and on the latter date they have the Heathkit demonstration. Both meetings are at the Hawker Siddeley Dynamics canteen, in Gunnels Wood Road, which is in the Stevenage industrial area.

Bristol University next, who write to advise us that they are on show, and looking for recruits at the "Freshers Squash" during Presco week; the future programme will be decided after they have seen how

many new faces there are, and on their enthusiasm!

A similar sort of recruiting drive is to take place at **Nottingham University**, where the gang have a stall going during "Week One"—the week prior to the start of term—when the hon. sec., Kate Fletcher, will be charming them into membership. Their 9 cm. transceiver project is progressing well and two equipments are now ready to go; in addition a change of shack has enabled them to get the HF band beam up higher, with the expectation of working more DX.

Expansion at **Southdown** is such that they have found it necessary to appoint a press secretary to handle the publicity side and deal with the many enquiries. Their stand at the Eastbourne Flower Show gained them good publicity when they worked an OK station and got some early information on the invasion of Czechoslovakia, which put them in the headlines of the local papers. Later they worked ZC4MO—and as they were doing so, in walked G2AON, who is related to ZC4MO!

The October meeting of the **Torbay** crowd will be at Hq., rear 94 Belgrave Road, when they will hear Sir Douglas Hall lecture on Transistor Regenerative Receivers. For details, date and time, etc., contact the hon. sec.—see Panel, p.504.

* * *

Abergavenny and **Border Counties** Horse Show was enlivened on August 10 by an exhibition station signing GB3ABS, run by the **Blackwood** group, which not only gave them a lot of fun, but also gave many members of the public a first insight into what Amateur Radio is all about. Their stand included a static display, and several 28.5 mc walkie-talkie sets came in handy for recalling operators from round the Show to do their stint on the air. A huge selection of QSL cards was on display, loaned by G6BK, with some from the GW6GW collection—GW6GW is the Club call but was originally held by one of their early members who was well known as a very fine CW operator.

On to **Hereford**, where they are still arguing it out with the local council over the proposal to move to a new Hq. Meeting date for October is the 4th, and as far as is known at the time of writing, will take place at Trinity Hall, Whitecross Road, although it would be as well to make a check with the hon. sec.

YMCA Blackburn is the venue for the **East Lincs.** shindig on October 3, and on October 19-20 they have a station operating at **Bowlee Scout Camp** for the eleventh

The Haverfordwest group went into camp on August 1, under their new call GW3XOT/P. Good DX, including OX and VK2, was worked using a Swan-500 into a 20m. ground-plane. In the picture are SWL's James, Thomas and Atkins, G3JZT (visiting), with GW3VEW and GW3UBV. Away in West Wales, Haverfordwest Amateur Radio Society is a small club, but they are on the right lines.



Jamboree; this event has always been a great satisfaction in previous years, thanks to the keenness and co-operation of the Scouts.

Last time round, we mentioned a proposed Junk Sale by the **Halifax** crew; however, this was put back in the programme due to the number of members away on holiday. They get together each Friday evening at the Sun Inn, Rastrick, and in addition there are visits and so on being organised for the winter months. For the details contact the hon. sec. at the address in the Panel.

Every Friday is also the programme for the **Aberdeen** lads, who assemble at 6 Blenheim Lane, Aberdeen at 7.30. October 4 is down for a Junk Sale, while on the 11th there will be a discussion, by a panel, of members' problems. GM3AEL talks about Space Flight Communications on October 18, and the month is rounded off by a Film Show on October 25.

Crawley have an Informal down for October 9, details of which may be obtained by ringing G3FRV at the address in the Panel. As for the main meeting, on October 23, this will be a talk and film show of his recent trip to the States by Arthur Milne, G2MI.

Hon. Secretaries to take note! G3MDW points out that he has now got the second W1BB tape lecture available and is accepting bookings—running time is 1 hour 43 minutes and there are 82 slides. General distribution will commence from November 1, so the Northern Heights chaps have their preview on October 30. October 5 sees them in the Big City for the Amateur Radio Show, and on the 9th there is a joint meeting with Spen Valley and Bradford lads. For October 19-20 they will put on at least one, and possibly two, Jamboree stations—the certain one is for 3rd Keighley Scouts. October 23 is down for another talk by Mr. Craven.

Over the Summer Bank Holiday, the **Silverthorn** chaps had their own field day, working LF, HF and VHF bands; four of the ten operators were G8's resulting from the last R.A.E. and so could be introduced to

operating techniques by the others.

After all these years, **Slade** are still in business, and still at the Church House, High Street, Erdington. October 5 is a double midnight D/F event, while October 11 is set aside for a Junk Sale at Hq. Sunday, October 13 is another D/F event, and on the 25th, member D. Grant will talk about House Wiring and the IEE Regulations.

Mansfield are a bit low on numbers at the moment, a phase which most groups go through at some time or other, but they are still quite definitely alive and kicking strongly. First Friday in each month at the New Inn, Westgate, Mansfield, is the form, and new faces will be welcome.

To avoid any clash with the Amateur Radio Exhibition, **Reigate** are moving their date from the usual first Wednesday to the second Wednesday in October, which places it on the 9th, at the George and Dragon, Cromwell Road, Redhill. G3RIN will talk about Transistor Transmitters.

That **Leicester** exhibition station at the City of Leicester Show was eventful as well as being good publicity. One of the Transceivers in use chose this public occasion to start making "smoke signals"—and the Quad fell down. The Quad was mended, but the bowling green on which it fell was a different matter!

Now to **Wirral**, safely in to their new Hq., which is at the former Civil Defence Headquarters, Upton Road, Bidston, Birkenhead. Here they are in session on the first and third Wednesday in each month. October 2 sees the election of a new committee at the all-important AGM, who will have as their first task settling the programme for the following year.

There are four items on the October list for **Coventry**, starting with a Film Show on the 4th; on the 11th they have a Night-on-the-Air with the group's transceiver, and over the period 18/21st they are to participate in the Scout Jamboree-on-the-air. To round things off

nically, member G8APB will reminisce on his recent trip to Canada, the date for this one being October 25.

* * *

Sunday evenings at Portchester Community Centre is the form at Fareham. There is a possibility that they will come up to the Exhibition on an organised trip, while on the 6th they play hosts to all the other groups using the Centre—a fine idea, this, which cannot but be of use to all the groups involved—and on the 13th they have a “How” talk for the newcomers; this one is on GDO's and will be given by the hon. secretary. On October 20 the G6CJ tape lecture on Aerials will be heard, and finally, on October 27 the lads have what is down as “Club Night—anything can happen!”

Sutton Coldfield gather in the Sutton Coldfield Town F.C. Clubhouse, Coles Lane, on the second and fourth Monday in each month. The programme seems

to be fully arranged right through to March 1969. October 14 is set apart for a Demonstration of Closed Circuit TV, by the Radio Rentals group, while the 28th is given over to nattering and dealing with the Club projects.

Now the summer season is pretty well over, “back to normal” is the motto for the Fulford lads, although this time we have no firm details of what is laid on. However, the hon. sec. would be *delighted* to pass on the details to any prospective member or visitor—see Panel.

Manchester University have a slight problem. They possess a KW-2000A, a lattice tower on which to hang the aerial, and a new shack—but the shack lacks a mains supply! No doubt this will have been resolved by the time we are in print, if G8AZP has anything to do with it. It is interesting to note that this group are able to admit a limited number of members from outside the University.

Names and Addresses of Club Secretaries reporting in this issue:

- ABERDEEN: J. McCall, GM3HGA, 1 Pinewood Place, Aberdeen (33838), AB1-9LT.
- ACTON BRENTFORD & CHISWICK: W. G. Dyer, G3GEH, 188 Gunnersbury Avenue, Acton, London, W.3.
- BISHOPS STORTFORD: A. Stanley, G3WUR, 43 Havers Lane, Bishops Stortford, Herts.
- BLACKWOOD: J. Hopkins, GW3XNI, 21 Gladstone Street, Crosskeys, Nr. Newport, Mon. NP1-7PA.
- BRISTOL (University): N. Cawthorne, G3TXF, Wills Hall, Stoke Bishop, Bristol, 9.
- BRITISH RAILWAYS: H. A. J. Gray, Eleven, Swanton Drive, East Dereham, Norfolk.
- BRITISH AMATEUR TELEVISION CLUB: D. Mann, G6OUO/T, 67 West Hill, Wembley Park, Middlesex.
- BURY & ROSSENDALE: A. Cooper, G3VVQ, 411 Holcombe Road, Greenmount, Nr. Bury.
- CAMBRIDGE (University): M. G. Pritchard, G3VNO, K2 St. Mary's Court, Caius College, Cambridge.
- CHESHUNT: K. Arnold, 21 Montayne Road, Cheshunt, Herts.
- CORNISH: W. J. Gilbert, 7 Poltair Road, Penryn, Cornwall.
- COVENTRY: C. Jaynes, 20 Belgrave Road, Wyken, Coventry CV2-5AY.
- CRAWLEY: R. G. B. Vaughan, G3FRV, Tralee, 5 Filbert Crescent, Gossops Green, Crawley (23359), Sussex.
- CRAY VALLEY: D. Buckley, G3VLX, 234 Halfway Street, Sidcup, Kent. (01-850 6945.)
- CRYSTAL PALACE: G. M. C. Stone, G3FZL, 11 Liphook Crescent, London, S.E.23. (FORest Hill 6940.)
- DUNSTABLE DOWNS: G. N. Bath, G3NMZ, 9 Chalton Heights, Luton, Beds.
- EAST LANCs.: J. Simpson, G4JS, 1 Marsh Terrace, Darwen, Lancs.
- EAST WORCS.: T. H. Westbury, 49 The Slough, Crabbs Cross, Redditch, Worcs.
- ECHELFORD: M. Clift, G3UNV, 45 Fordbridge Road, Ashford (59628), Middx.
- FAREHAM: J. A. Rampton, G3VFI, 23 Oxford Close, Fareham, Hants.
- FULFORD: G. B. Widnall, G3XJJ, 5 Heslington Croft, Fulford (77501), York.
- GUILDFORD: A. Wilkes, G3SLH, Schiehallion, Hookley Lane, Elstead, Godalming, Surrey.
- HALIFAX: D. G. Perkin, 16 Bentley Avenue, Lightcliffe, Halifax.
- HEREFORD: B. Edwards, G3RJB, 5 Powys Walk, Hereford.
- HONG KONG: H. Asmussen, VS6AD, P.O. Box 541, Hong Kong.
- LEICESTER: N. Tomlinson, G8BOA, 33 Merton Avenue, Leicester.
- LINCOLN: W. Felton, 4 Eastfield Close, Welton, Lincoln.
- MAIDENHEAD: E. C. Palmer, G3FVC, 37 Headington Road, Maidenhead (20107), Berks.
- MANCHESTER (University): S. R. Turner, G3UJI, Amateur Radio Society, Manchester University.
- MANSFIELD: F. N. F. Bewley, G8HX, 116 Westfield Lane, Mansfield (25208), Notts.
- MELTON MOWBRAY: D. W. Lilley, G3FDF, 89 Sandy Lane, Melton Mowbray (3579), Leics.
- MID-CHESHIRE: D. Bendelow, 191 St. Johns Gardens, Over, Winsford, Cheshire.
- MIDLAND: C. J. Haycock, G3JDJ, 29A Wellington Road, Handsworth, Birmingham, 20.
- MID-SUSSEX: E. J. Letts, G3RXJ, 87 Meadow Lane, Burgess Hill, Sussex.
- MID-WARWICKSHIRE: J. F. Coggins, Market Corner, Coventry Road, Baginton, Warwickshire. (Toll Bar 3688.)
- NAILSWORTH: F. J. D. Hills, G8BEL, 1 Oxleaze Close, Tetbury, Glos.
- NORFOLK: M. J. Cooke, 76 Falcon Road West, Sprowston, Norwich (46093), NOR-73R.
- NORTHERN HEIGHTS: A. Robinson, G3MDW, Candy Cabin, Ogden, Halifax (44329), Yorkshire.
- NOTTINGHAM (UNIVERSITY): Miss K. Fletcher, Radio Society, The Union, Nottingham University, University Park, Nottingham NG7-2RD.
- PETERBOROUGH: D. Byrne, G3KPO, Jersey House, Eye (351), Peterborough.
- PURLEY: A. Frost, G3FTQ, 62 Gonville Road, Thornton Heath, Surrey, CR4-6DB.
- RADIO SOCIETY OF EAST AFRICA: P.O. Box 5681, Nairobi, Kenya.
- R.A.I.B.C.: Mrs. Frances Woolley, G3LWY, 331 Wigan Lane, Wigan, Lancs.
- READING: M. F. Taylor, G3LFM, 58 Nightingale Road, Woodley, Reading.
- REIGATE: D. Thom, G3NKS, Bankside, 58 Garlands Road, Redhill, Surrey.
- ROYAL NAVY: R/S.W. Metcalfe, G3TIF, H.M.S. Mercury, Leydene, Petersfield, Hants.
- RUGBY: R. T. Craxton, G3IKL, 103 Clifton Road, Rugby.
- SALOP: W. Lindsay-Smith, G3WNI, 22 Kingswood Crescent, Copthorne, Shrewsbury.
- SHEFFORD: M. B. Goodwin, G3WKR, 16 Roe Close, Stotfold, Hitchin, Herts.
- SILVERTHORN: G. E. Fenner, G3VMO, 80 Larkshall Crescent, Chingford, E.4. (01-529 6613.)
- SLADE: J. E. Drakeley, 244 Yardley Fields Road, Yardley, Birmingham, 33. (021-783 7363.)
- SOLIHULL: J. Lester, G3VXV, 173 Damson Lane, Solihull, Warwickshire. (021-703 3060.)
- SOUTHDOWN: L. E. Tagliacorro, 9 Tugwell Road, Hampden Park, Eastbourne (4244), Sussex.
- STEVENAGE: D. R. French, G3TIK, 98 Austen Paths, Stevenage.
- SURREY: R. Morrison, G3KGA, 33 Sefton Road, Croydon, Surrey CR4-7HS. (01-654 5982.)
- SUTTON COLDFIELD: A. W. Fernyhough, G8AVH, 114 Endhill Road, Kingstanding, Birmingham, 22C.
- SWINDON: E. J. Andrews, G3JAP, 56 Windsor Road, Swindon (21402), Wilts.
- TORBAY: D. T. Hind, G3VNG, 46 Thurlow Road, Torquay, Devon.
- VERULAM: J. Thomas, G3RXA, 9 Highland Drive, Hemel Hempstead (55136), Herts.
- WAMRAC: Rev. A. W. Shephard, G3NGF, 52 Thanet Street, Clay Cross (2184), Chesterfield, Derbyshire.
- WIRRAL: J. J. M. Phillips, G3PXX, 16 Collingham Green, Little Sutton, Wirral, Cheshire.
- YORK: J. A. Rainbow, G8BOK, 14 Temple Road, Bishopthorpe, York, YO2-1QN.

As has been remarked before, Stevenage and Shefford have always had ties, and one appears in the current Shefford programme, when they go to Stevenage to see the Heathkit demonstration. October 10 is devoted to the alignment of Superhet receivers, by G3ROL, and for the first meeting of the month, on October 3, they will entertain a visiting group of Sandy Scouts, with a series of lecturettes on various topics. Later in the month, we note October 24 for a discussion on Radio Control of Models, by J. Brunt, and on the 31st, G3VMI talks about Amateur Radio Gadgets.

Nailsworth took the trouble to write in for their MCC ident. as soon as we mentioned the subject in this piece—*thanks*—and if you are in the area, they are always on the look-out for new members and visitors. To get the up-to-date gen. on their programme contact the hon. sec.—see Panel.

Mid-Warwickshire have clubrooms at 28 Hamilton Terrace, Leamington Spa, and the programme of talks for October rather suggests enthusiasm for constructional work among the membership here. October 7 is devoted to a tape lecture, and on the 14th Dennis Dumbleton, G3HCM, will discuss the Design and Construction of Simple Transmitters. For the 21st, the topic is "Layout and Construction," and then on the 28th, Mr. A. J. Woodhouse of Vero Electronics will come along and discuss ways and means of using *Veroboard* in our field. Incidentally, the facilities available at Hq. include a library, museum, workshops, test gear and of course the Club station G3UDN.

It looks like the second Thursday for the meeting of the East Worcestershire group, and the venue is the Old People's Home, Park Road, Redditch; however, there is a slight element of doubt in the writer's mind, and so we have to refer you to the hon. sec.—see Panel.

Every Thursday at the Old Post Office Hotel in Milk Street, is the normal form for Shrewsbury and their meeting at Hq. on October 10 takes the form of the AGM. In addition there is a trip to the Show down for October 5, and on October 25 they go to the Beacon Hotel, Shrewsbury for the annual dinner and social evening.

* * *

October 15 is the date to book if you want to join Acton, Brentford and Chiswick; on that evening they will foregather at 66 High Road, Chiswick, to hear G3CCD demonstrate and discuss his Transistorised SSB Transmitter.

October 17 at St. John Ambulance Hall, Asfordby, gives date and venue for the Melton Mowbray crowd, but as the September one was the AGM, we are not able to give firm details of the programme. However, the hon. sec. would be pleased to satisfy your curiosity—see Panel for his address.

British Railways A.R.S. caters for the radio amateurs in the service of British Railways and associated organisations. They put out a *Newsletter*, of which the August one to hand is quite the best for some time.

Lucky your scribe has a good memory, and a well-indexed filing system. The Mid-Cheshire group hon. sec. waxed so enthusiastic about the group and all its activities that he completely forgot to mention who he was writing about! They have close links with the I.C.L. (Winsford)

MCC—TWENTY-THIRD ANNUAL TOP BAND CLUB TRANSMITTING CONTEST RULES

- Duration:** Saturday, November 9 and Sunday, November 10; on both days between the hours of 1700 and 2100 GMT (eight operating hours in all).
- Frequency and Power:** All contacts to be made in the 1800-2000 kc band, using CW only, with a power input not exceeding 10 watts to the final stage. All reasonable precautions will be taken to avoid interference to other services using the band.
- Call Signs:** Where a Club has its own transmitting licence and callsign, that callsign is to be used. Clubs without their own call may nominate a member's station as their official entry.
- Calling:** Clubs will call "CQ MCC," using the "three times three" procedure. Infringement of this rule by the use of long CQ calls may entail disqualification.
- Scoring:** Other Club stations may be worked on each of the two days, and these contacts will count for three points each time. Non-club stations may be worked once only, and will count for one point only. Inter-Club contacts will take the form of an exchange of six-character groups comprising RST and the Club identification letters. (See pp.506-507.)
- Non-Club Contacts:** Contacts with non-Club stations, counting for one point, will take the form of logging the RST and the QTH of the other station. The Club's own QTH, not the identification letters, should be sent to complete the QSO.
- Logs:** Contest logs are to be legibly set out as follows: One side only of quarto or foolscap sheets should be ruled into eight columns with *name and callsign of Club station on each sheet*, headed thus: Col. 1, *Date and Time*. Col. 2, *Callsign of station worked*. Col. 3, *Outgoing six-character group*. Col. 4, *Incoming six-character group*. Col. 5, *RST outgoing* (to a non-Club station). Col. 6, *RST Incoming* (from a non-Club station). Col. 7, *QTH of Non-Club station*. Col. 8, *Points claimed for contact*. Col. 8 is to be totalled at the foot of each page, and the running totals brought forward. The last page of the log should contain the following summary:
Total score for Club contacts at three points per contact; this figure then to be multiplied by the Zone Multiplier (see p.506), e.g. a station in the GW Zone making 150 contacts would give the figure 450 and then apply the Zone Multiplier of 1.1, giving a total Club score of 495; *add* the total of non-Club contacts; total score. Add a declaration that the station was operated in accordance with the Rules and spirit of the Contest. Comments on the equipment, the number of operators, experiences, and impressions are invited, and should be added at the end of the Log.
- Any Club station radiating a note consistently worse than T9 will be liable to disqualification.
- Logs, addressed to "Club Secretary," SHORT WAVE MAGAZINE, BUCKINGHAM, must be posted to reach us not later than Friday, November 22, 1968. The Editor's decision on the results will be final, and will be published in the January, 1969 issue of SHORT WAVE MAGAZINE, due on December 27.

THE MCC ZONES

Although, under the rules, all Club contacts count for the same score of three points, and there is thus no need to know the Zone in which the station worked is located, it is necessary for each Club to know the Zone in which it is itself located, for the purpose of applying the multiplier to its own final score of Club contacts. The Zones are as follows:

GM Zone:	All Scottish counties.
Northern Zone:	Northumberland, Durham, Cumberland, Westmorland, Lancashire, and Yorkshire.
Midland Zone:	Cheshire, Derby, Shropshire, Stafford, Hereford, Worcester, Warwick, Nottingham, Lincoln, Leicester, Rutland, Northampton, Bedford, Huntingdon, Cambridge, Norfolk, Suffolk.
Southern Zone:	Somerset, Dorset, Gloucester, Wilts., Berks., Hants., Oxford, Bucks., Herts., Middlesex, Surrey, Sussex, Kent, Essex, London.
South-Western Zone:	Cornwall and Devon.

GW Zone:	All Welsh counties.
GI/GD Zone:	All GI counties and the Isle of Man.
GC Zone:	Channel Islands.

Scoring

The score for Club contacts only will be arrived at by counting three points per contact (irrespective of Zone) and then applying to the total the following multiplier:

GM Zone:	2.0
Northern Zone:	1.25
Midland and GW Zones:	1.1
South-Western Zone:	1.5
GI/GD Zone:	1.6
GC Zone:	1.3
Southern Zone:	1.0

IDENTIFICATION CODES FOR CLUBS IN "MCC"

<i>A01</i> Aberdeen	<i>C17</i> Cornish	<i>H07</i> Henley-in-Arden	<i>M04</i> Maidstone YMCA
<i>A02</i> Acton, Brentford & Chiswick	<i>C18</i> Coventry	<i>H08</i> Hereford	<i>M05</i> Manchester (University)
<i>A03</i> Addiscombe	<i>C19</i> Crawley	<i>H09</i> Heriot-Watt University	<i>M06</i> Mansfield
<i>A04</i> A.E.R.E. (Harwell)	<i>C20</i> Cray Valley	<i>H10</i> High Wycombe	<i>M07</i> Medway
<i>A05</i> Ainsdale	<i>C21</i> Crystal Palace	<i>H11</i> Hillingdon	<i>M08</i> Melton Mowbray
<i>A06</i> Ampfield Contest	<i>C22</i> Culcheth	<i>H12</i> Hull	<i>M09</i> Mid-Cheshire
<i>A07</i> Ardeer (I.C.I.)	<i>D01</i> Derby	<i>I01</i> Ipswich	<i>M10</i> Mid-Herts
<i>A08</i> Ashton-under-Lyne	<i>D02</i> Dorking	<i>I02</i> Isle of Man	<i>M11</i> Midland
<i>A09</i> Albrighton	<i>D03</i> Dudley	<i>I03</i> Isle of Wight	<i>M12</i> Mid-Sussex
<i>B01</i> Baden-Powell House	<i>D04</i> Dunstable Downs	<i>K01</i> Keele (University)	<i>M13</i> Mid-Warwickshire
<i>B02</i> Ballymena	<i>D05</i> Durham City	<i>K02</i> Kings Norton Contest	<i>M14</i> Moray Firth
<i>B03</i> Bangor, Co. Down	<i>D06</i> Dover, Deal & District	<i>K03</i> Kirkcaldy	<i>N01</i> Nailsworth
<i>B04</i> University College Bangor	<i>E01</i> Ealing	<i>L01</i> Leeds	<i>N02</i> Newark
<i>B05</i> Barry College of Further Education	<i>E02</i> East Kent	<i>L02</i> Leicester	<i>N03</i> Newcastle-on-Tyne (University)
<i>B06</i> Basildon	<i>E03</i> East Lancs.	<i>L03</i> Leyton and Walthamstow	<i>N04</i> Newham
<i>B07</i> Basingstoke	<i>E04</i> East Worcs.	<i>L04</i> Lichfield	<i>N05</i> Norfolk
<i>B08</i> Bedford	<i>E05</i> Echelford	<i>L05</i> Lincoln	<i>N06</i> Northampton
<i>B09</i> Bishops Stortford	<i>E06</i> Edgware	<i>L06</i> Lindholme RAF	<i>N07</i> Northern Heights
<i>B10</i> Blackpool & Fylde	<i>E07</i> Exeter	<i>L07</i> Liverpool	<i>N08</i> Northern Poly
<i>B11</i> Bradford	<i>E08</i> East Cheam	<i>L08</i> Liverpool (University)	<i>N09</i> North Kent
<i>B12</i> Brighton (College of Technology)	<i>E09</i> East Barnet	<i>L09</i> Lothians	<i>N10</i> North Liverpool
<i>B13</i> Brighton (Technical College)	<i>E10</i> Enfield College of Technology	<i>L10</i> Loughton	<i>N11</i> North Staffs.
<i>B14</i> Bristol	<i>F01</i> Fareham	<i>L11</i> Luton	<i>N12</i> Nottingham
<i>B15</i> Bristol (RSGB)	<i>F02</i> Farnborough	<i>L12</i> Leyland Hundred	<i>N13</i> Nottingham (University)
<i>B16</i> Bristol (University)	<i>F03</i> Fawley	<i>M01</i> Macclesfield	<i>N14</i> Nuneaton
<i>B17</i> Bromsgrove	<i>F04</i> Flint	<i>M02</i> Magnus Grammar School	<i>N15</i> Norwood Tech.
<i>B18</i> Burnham-on-Sea	<i>F05</i> Fulford	<i>M03</i> Maidenhead	<i>N16</i> North Staffs. (Burslem)
<i>B19</i> Bury & Rossendale	<i>F06</i> Fylindales (E.W. Station)		<i>O01</i> Otley
<i>B20</i> Bury St. Edmunds	<i>F07</i> Forest Glades Contest		
<i>B21</i> Belfast YMCA	<i>G01</i> Glasgow (University)		
<i>B22</i> Brunel University	<i>G02</i> Glenrothes		
<i>C01</i> Cambridge	<i>G03</i> Gosport		
<i>C02</i> Cardiff	<i>G04</i> Government Communications		
<i>C03</i> Chelmsford	<i>G05</i> Grafton		
<i>C04</i> Cheltenham	<i>G06</i> Greenford		
<i>C05</i> Cheltenham (RSGB)	<i>G07</i> Greenock		
<i>C06</i> Chepstow, Mon.	<i>G08</i> Grimsby		
<i>C07</i> Chesham	<i>G09</i> Guernsey		
<i>C08</i> Cheshunt	<i>G10</i> Guildford		
<i>C09</i> Chester	<i>H01</i> Halifax		
<i>C10</i> Chiltern	<i>H02</i> Harlow		
<i>C11</i> Chippenham	<i>H03</i> Harrow		
<i>C12</i> City University	<i>H04</i> Haverfordwest		
<i>C13</i> Cleveland	<i>H05</i> Havering		
<i>C14</i> Clifton	<i>H06</i> Hemel Hempstead		
<i>C15</i> Colchester			
<i>C16</i> Conway Valley			

(NOTE: This list includes all Clubs entering MCC at any time in the last three years. Other Clubs desiring to enter this year's event should write in, immediately, for identification codes, enclosing a stamped addressed envelope. Letters should be addressed "MCC," SHORT WAVE MAGAZINE, BUCKINGHAM.)

EXAMPLES FOR OPERATING

Coventry works Derby, sends 579C18; Derby replies 569D01. Or Racial works Paddington, receiving 589P01 and sending 589R01

EXAMPLES FOR SCORING

Cornish (C17) in South-Western Zone makes 75 Club contacts and ten single-point (non-Club) QSOs. The score for Club contacts is 75×3 (225) and the multiplier allowed is 1.5, bringing this up to 337. Total score is thus 337 plus 10 equals 347.

Glasgow University (G01) in GM Zone, makes 45 Club contacts and ten single-pointers. The score for Club contacts is 45×3 (135) and subject to a multiplier of 2, bringing it up to 270. Total score of 270 plus 10 equals 280.

O02 Oxford	R10 Rugby	S19 South-East EI	T02 Torbay
P01 Paddington	S01 St. Helens	S20 Southgate	V01 Verulam
P02 Painton	S02 Salisbury	S21 South Manchester	V02 Veteran Operators
P03 Pembroke	S03 Salop	S22 Southport	W01 Wakefield
P04 Peterborough	S04 Saltash	S23 South Shields	W02 Wattisham RAF
P05 Plymouth	S05 Scarborough	S24 Spen Valley	W03 Wessex
P06 Port Talbot	S06 Scottish Borders	S25 Stevenage	W04 West Kent
P07 Preston	S07 Scunthorpe	S26 Stockport	W05 Westmorland
P08 Pudsey	S08 Sealand RAF	S27 Stoke-on-Trent	W06 Wimbledon
P09 Purley	S09 Sheffield	S28 Stourbridge	W07 Wirral
P10 Pye	S10 Shefford	S29 Stratford-on-Avon	W08 Wolverhampton
R01 Racal	S11 Silverthorn	S30 Stroud	W09 Worcester
R02 Radio Club of Scotland	S12 Skegness	S31 Sunderland	W10 Worthing
R03 Reading	S13 Slade	S32 Surrey	Y01 Yeovil
R04 Redbridge	S14 Southampton	S33 Sussex (University)	Y02 York
R05 Reigate	S15 Southampton (University)	S34 Sutton & Cheam	101 1st Barnston Scouts
R06 Rhondda	S16 South Birmingham	S35 Sutton Coldfield	701 73 SSB Society
R07 Rhyl	S17 South Bucks. Contest	S36 Swindon	201 235 Squadron ATC
R08 Roding Boys	S18 South Downs	S37 University of Sheffield	
R09 Rotherham		T01 Thames Valley	

club, and wonder if there are any other radio amateur groups within the I.C.L. group of companies, who would care to get in touch with them? They meet at Oak House Farm, Beeston Drive, Winsford, on each Wednesday evening.

The hon. secretary of **Purley**, writing about the programme for October, remarks that there is a Junk Sale on October 18, for which they will "definitely need the large Hall." Whether to house the Junk or the buyers is not specified—but there will be plenty of both, as this is a strong and active crowd. October 4 is an Informal, in the small hall. Both rooms are at the Railwaymen's Hall, Whytecliffe Road, Purley.

Down in the West Country are **Cornish**, who have a main meeting at the SWEB Clubroom, Pool, Camborne—October 5 is the date for this, when a short film of Club activities will be shown, followed by a talk on Goonhilly, the G.P.O. space station. On October 10 there is a lecture on Aerials by J-Beams Engineering Ltd., which will be at the Savoia Hotel, Newquay. In addition there are the usual SSB and VHF group meetings. There seems to be a slight problem as to the venue for the latter two, and all we can safely say is that they will be in the Truro area.

The Royal Navy have their own group, **R.N.A.R.S.**, and keep in touch by way of a newsletter, plus several activities, contests, and so on. An ex-R.N. type will find it worth while to become a member.

A new group was formed recently at **Solihull**. The initial meeting was attended by thirty members, and they are now arranging regular sessions on the third Thursday in each month; this means the October date will be the 17th, and it is hoped that on this evening there will be a Junk Sale. All other details may be obtained from the hon. secretary, address as in the Panel, p.504.

Three meetings are on the list for **Swindon**, at Penhill Junior School. October 9 is an Informal, and on the 18th there is the matter of the Club dinner. October 23 should be interesting, as they have a talk on the use of Silicon Integrated Circuits in SSB Equipment.

The interests of those who licensed for amateur

television (A/TV) are catered for by the **British Amateur Television Club**, who put out their admirable *CQ-TV* journal, which is jam-packed with useful information. Anyone interested in the A/TV side would find a good reason for joining.

At **Maidenhead** there will be a lecture, given on October 7, by G3OOD, on the subject of the radio amateur participation in the East African Safari Rally. Tuesday, October 15 is the informal, and over the weekend of October 19-20 the lads will be operating a Jamboree station—anyone welcome to come along and look at this one, GB3MAI at the Braywick Road Sports Centre—and of course visitors are always welcome at the normal meetings. G3FVC, who appears each month in the Address Panel, would be pleased to pass on details.

Lincoln Short Wave Club are going great guns—every Tuesday at No. 2 Guardroom, Sobraon Barracks, at the end of Breedon Drive.

Bishops Stortford get together at the British Legion Club, Windhill, each month on the third Monday, and are at the moment going through a series of three lectures on Receivers. Visitors always welcome, of course.

Next move is to Ashford, where the local group uses the earlier form of the name as **Echelford**—and although

SPECIAL NOTICE TO SECRETARIES!

Closing date for the November issue is October 4, and for December's "Month with The Clubs" it will be November 8. No regular Club reports will appear in our issue for January 1969 because, as usual, the "Clubs" space will be given over to the write-up and discussion on MCC, the Magazine Top Band Club Contest (taking place over the weekend November 9/10, full details are in this issue). After December's "Short Wave Magazine," the next regular Club reports will be in our February issue, for which the closing date is Friday, January 10, 1969. Honorary secretaries (and those reporting for Clubs) are asked to note these dates carefully, because they ensure continuity in the Club reporting.

the name is old they are as lively as crickets and as "with it" as 1969. There is always something of interest in the programme, and this is reflected in the size of the membership lists, both licensed and otherwise.

Over at **Guildford** they put out a fine news-sheet which they call the *Natter*. This time there is a list of the future dates right through to April next year, which looks pretty fair. They, like so many other groups, will be organising a trip up to Town for the Show on October 5; and on the 11th and 25th October there in for a Natter Nite.

* * *

Up at **Cambridge University** there is a club; the Club call is G6UW, which has been in the *Call Books* a very long time. This year they restart things again, and to attract new members they have a stand at the Societies' Show, at the Corn Exchange, October 8-9; the first meeting of the new session will be at the Psychology Department Lecture Room, 8.15 p.m. on October 15.

That **Dunstable Downs** crowd is booming, and they have now gone into business with a *Newsletter*, on which they are really to be congratulated, both as to the contents and the presentation. For details, contact the hon. sec. at the address in the Panel.

The Radio Society of **East Africa** *Newsletter* indicates that the chaps in 5Z4 are fully aware of the need to be known in the right way by the right people in the right places! It also shows that, just as in U.K. most of the work is done by a tiny minority of the members.

In **Hong Kong**, the pattern is slightly different, the emphasis being on the "local club" aspect of things. They have a Club call, VS6AJ, and a Sunday-morning local net, together with a weekly social meet at the China Fleet Club.

Back home again, to **Crystal Palace**, where G3FZL sends out the news-sheet each month. From the latter, we gather that on October 19, G3IIR will reminisce about the Early Days. 8 p.m. at the Emmanuel Church Hall, Barry Road, London, S.E.22.

The **Midland** lads have a room at the Midland Institute where they get together on the third Tuesday in each month—and if you live in the Birmingham area you should not need telling where the Midland Institute is! For the few who don't, try looking for it in Margaret Street.

Verulam have G3SBA lined up for the October, meeting, which as usual will be at the Cavalier Hall St. Albans, on the third Wednesday. Additionally, there is an informal, details of which can be obtained from the hon. secretary. Incidentally, G3SBA will deal, with assistance from his KW-2000A and a "scope, with "P.E.P. and All That"—and one would think that the measurement of peak envelope power should appear more often on Club programmes, because there are not many stations using SSB who know just how they can measure their peak power in accordance with the rules.

At the time of writing we do not know exactly what the **Surrey** gang will be doing in October; whatever it is, it will be happening on October 17 at the Blue Anchor in South Croydon, and the lads will always be pleased to see new faces.

R.A.I.B.C., as we have remarked before in this piece, looks after the interests, and organises help as may be needed, for the invalid and blind members of our fraternity. Their newsletter *Radial* is certainly looked forward to each month by your conductor, who invariably finds a chuckle in it. The gang have their nets on Eighty—3.7 mc to be a bit more precise—at 1000z on Tuesdays, 1400z Wednesdays, plus, of course the Cheshire Homes net "same time and place" each Thursday.

At **Rugby**, the clubroom has now been redecorated, and the next step is the erection of aerials for all bands 160 to 2 metres. They have Tuesdays and Thursdays as the regular evenings, with R.A.E. instruction planned for Wednesdays. The new Hq. on which all the effort has been expended is at 10 Drury Lane, and they would be *delighted* to share the fruits of their labours with visitors and new members!

The first Friday in each month sees the **Peterborough** group having their lectures and demonstrations at the local Tech. College, but on the other Fridays in the calendar, they can be found "at home" in their hide-away, the Old Windmill on the London Road.

Reading missed the boat, almost, with their list for this month; they have a change of venue to report, to the Victory, The Meadway, Tilehurst, where they will be foregathering on October 8 and 22nd.

A busy month is in prospect for the **Norfolk** types, who have Hq. at the Brickmakers' Arms, Sprowston Road, Norwich; October 7 sees a lecture and discussion on Linear Amplifiers, the 14th is an informal evening, the 21st a Quiz, and on the 28th G8AUN will give a talk on Industrial Electronics. The first session in November is to be a Junk Sale—which is sure to be popular!

* * *

Finally, we are asked to make it clear that WAMRAC welcomes members of *any* religious persuasion. This international radio amateur Club—which was founded by the Rev. Arthur Shepherd, G3NGF, who devotes a great deal of effort to making it a worth-while force in the radio amateur context—is not confined to Methodists. At least 20 per cent of WAMRAC members belong to other Churches.

Deadline

Which clears the clip for this time; your next reports should deal with the goings-on for November, and be composed in time for them to arrive with us by first post **Friday, October 4**, addressed to "Club Secretary," SHORT WAVE MAGAZINE, BUCKINGHAM. To do most good, make sure you include the address of your Hq., and check the name, address, and telephone number of your honorary secretary.

73, and hope to see you at the Show.

Reports too late for coverage in this feature—were also received from the following Clubs: Civil Service, Yeovil, Scarborough, Saltash, Lothians, Southgate, South Manchester and Pudsey.—*Editor*.

LIST OF COUNTRIES BY PREFIXES, ALSO SHOWING ZONES

(Corrected to September 1968)

CURRENT PREFIXES ONLY

Prefix	Country (Zone)	Prefix	Country (Zone)	Prefix	Country (Zone)
A2	Botswana (38)	FL	French Territory of the AFARS and ISSAS (37)	IS	Sardinia (15)
AC	Bhutan (22)	FM7	Martinique (8)	IT	Sicily (15)
AC3	Sikkim (22)	FO8	French Oceania (31), (32)	IZ	Ponziane Is. (15)
AC4	Tibet (23)	FO8	Clipperton Island (7)	JA, JH	Japan (25)
AP	East Pakistan (22)	FO8	Maria Theresa (32)	JT	Mongolia (23)
AP	West Pakistan (21)	FP8	St. Pierre and Miquelon (5)	JW	Spitzbergen (40)
BV	Taiwan (24)	FR7	Reunion (39)	JX	Jan Mayen (40)
BY	China (23), (24)	FR7	Glorieuses Is. (39)	JY	Jordan (20)
CE	Chile (12)	FR7	Mozambique Channel Islets (Europa, Juan de Nova, and Bassas da India (39)	K	(see W)
CE9	Chilean bases in Antarctica and South Shetland Is. (13), (12)	FR7	Mozambique Channel Islets (Europa, Juan de Nova, and Bassas da India (39)	KA	(see JA)
CE0A	Easter Island (12)	FR7	Tromelin (39)	KA1	Bonin and Volcano Is. (27)
CE0X	San Felix and San Ambrosio (12)	FS7	St. Martin (8)	KB6	Marcus Island (27)
CE0Z	Juan Fernandez (12)	FU8	New Hebrides (32)	KC4	Baker, Howland, and American Phoenix Is. (31)
CM, CO	Cuba (8)	FW8	Wallis and Futuna Is. (32)	KC4	Navassa Island (8)
CN	Morocco (33)	FY7	French Guiana (9)	KC6	U.S.A. bases in Antarctica (12), (13), (30), (32)
CP	Bolivia (10)	G	England (14)	KC6	Eastern Caroline Is. (27)
CR3	Portuguese Guinea (35)	GB	Great Britain (special stations)	KC6	Western Caroline Is. (27)
CR4	Cape Verde Is. (35)	GC	Jersey (14)	KG4	Guantanamo Bay (8)
CR5	Sao Tome and Principe (36)	GC	Channel Is. (excluding Jersey) (14)	KG6	Guam (27)
CR6	Angola (36)	GD	Isle of Man (14)	KG6	Mariana Is. (excluding Guam) (27)
CR7	Mozambique (37)	GI	Northern Ireland (14)	KH6	Hawaiian Is. (31)
CR8	Portuguese Timor (28)	GM	Scotland (14)	KH6	Kure Island (31)
CR9	Macao (24)	GW	Wales (14)	KJ6	Johnston Island (31)
CT1	Portugal (14)	HA	Hungary (15)	KL7	Alaska (1)
CT2	Azores Is. (14)	HB	Switzerland (14)	KM6	Midway Is. (31)
CT3	Madeira Is. (33)	HB0	Liechtenstein (14)	KP4	Puerto Rico (8)
CX	Uruguay (13)	HC	Ecuador (10)	KP6	Jarvis Is. and Palmyra Group (31)
DI, DJ, DK, DL, DM	Germany (14)	HC8	Galapagos Is. (10)	KR6, KR8	Ryukyu Is. (25)
DU	Philippine Is. (27)	HG	(see HA)	KS4	Swan Is. (7)
EA	Spain (14)	HH	Haiti (8)	KS4B	Serrana Bank (7)
EA6	Balearic Is. (14)	HI	Dominican Republic (8)	KS6	American Samoa (32)
EA8	Canary Is. (33)	HK	Colombia (9)	KV4	U.S. Virgin Is. (8)
EA9	Ceuta and Melilla (33)	HK0	San Andres and Providencia (7)	KW6	Wake Island (31)
EA9	Ifni (33)	HK0	Bajo Nuevo (8)	KX6	Marshall Is. (31)
EA9	Spanish Sahara (33)	HK0	Malpelo (9)	KZ5	Canal Zone (7)
EA0	Rio Muni and Fernando Poo (36)	HL, HM	Serrana Bank (see KS4B)	LA, LG, LH,	
EI	Republic of Ireland (14)	HP	Korea (25)	LJ	Norway (14)
EL	Liberia (35)	HR	Panama (7)	LU	Argentina (13)
EP	Iran (21)	HS	Honduras (7)	LU-Z	Argentine bases in Antarctica, South Orkney Is., South Shetland Is. and South Sandwich Is. (13)
ET	Ethiopia (37)	HV	Thailand (26)	LX	Luxembourg (14)
F	France (14)	HZ	Vatican (15)	LZ	Bulgaria (20)
FB8 (FB8WW)	Crozet Is. (39)	I	Saudi Arabia (21)	MI*	(see 9A)
FB8 (FB8XX)	Kerguelen Is. (39)	IC	Italy (15)	MP4B	Bahrein Is. (21)
FB8 (FB8YY)	Adelie Land (French bases in Antarctica) (30)	IE	Capri (15)	MP4D	Das Island (21)
FB8 (FB8ZZ)	Amsterdam and St. Paul (39)	IL	Lipari Is. (15)		
FC	Corsica (15)	IP	Ischia (15)		
FG7	Guadeloupe (8)		Pelagian Is. (33)		
FH8	Comoro Is. (39)		Pantelleria (33)		
FK8	New Caledonia (32)				

Prefix	Country (Zone)	Prefix	Country (Zone)	Prefix	Country (Zone)
MP4M	Sultanate of Muscat and Oman (21)	UA1 (UAIKED)	Franz Josef Land (40)	VP8	South Shetland Is. (13)
MP4Q	Qatar (21)	UA1, 3, 4, 6, 9	U.S.S.R. (Europe) (16)	VP8	British bases in Antarctica (13), (12), (38)
MP4T	Trucial Oman (21)	UA2	Kaliningradsk (15)	VP9	Bermuda (5)
OA	Peru (10)	UA9, UA0	U.S.S.R. (Asia) (17), (18), (19), (23)	VQ8	Mauritius (39)
OD	Lebanon (20)	UB5	Ukraine (16)	VQ8	Agalega Is. and Cargados Carajos Shoals (39)
OE	Austria (15)	UC2	White Russia (16)	VQ8	Blenheim Reef (39)
OH	Finland (15)	UD6	Azerbaijan (21)	VQ8	Chagos Is. (39)
OH0	Aland Is. (15)	UF6	Georgia (21)	VQ8	Geyser Bank (39)
OK, OL	Czechoslovakia (15)	UG6	Armenia (21)	VQ8	Rodriguez (39)
ON	Belgium (14)	UH8	Turkoman (17)	VQ9	Seychelles (39)
OR	Belgian bases in Antarctica (38)	UI8	Uzbek (17)	VQ9	Aldabra Is. (39)
OX	Greenland (40)	UJ8	Tadzhik (17)	VQ9	Desroches Island (39)
OY	Faroe Is. (14)	UL7	Kazakh (17)	VQ9	Farquhar Group (39)
OZ	Denmark (14)	UM8	Kirghiz (17)	VR1	British Phoenix Is. (31)
PA, PE, PI	Netherlands (14)	UN1	Karelo - Finnish Republic (16)	VR1	Gilbert and Ellice Is. (31)
PJ-A, PJ-B, PJ-C	Netherlands Antilles (Aruba, Bonaire, Curacao) (9)	UO5	Moldavia (16)	VR2	Fiji Is. (32)
PJ-E, PJ-M, PJ-S	Netherlands Antilles, (St. Eustatius, Sint Maarten, Saba) (8)	UP2	Lithuania (15)	VR3	Fanning and Christmas Island (31)
PX	Andorra (14)	UQ2	Latvia (15)	VR4	Solomon Is. (28)
PY	Brazil (11)	UR2	Estonia (15) (see UB5)	VR5	Tonga (32)
PY	Fernando de Noronha (11)	UT5	(see UA)	VR6	Pitcairn (32)
PY0	St. Peter and St. Paul Rocks (11)	UV, UW, UZ	(see UB5)	VS5	Brunei (28)
PY0	Trindade and Martin Vaz Is. (11)	UY5	Canada (1), (2), (3), (4), (5)	VS6	Hong Kong (24)
PZ	Surinam (9)	VE	Australia (29), (30)	VS9M	Maldiva Is. (22), (39)
SM, SK, SL	Sweden (14)	VK	Lord Howe Island (30)	VU	India (22)
SM1	Gotland (14)	VK	Willis Is. (30)	VU	Andaman and Nicobar Is. (26)
SP	Poland (15)	VK7	Tasmania (30)	VU	Laccadive Is. (22)
ST	Sudan (34)	VK9	Christmas Island (29)	W, WA, WB, WF, WN, WV	U.S.A. (3), (4), (5) (see KG6)
SU	United Arab Republic (34)	VK9	Cocos - Keeling Is. (29)	WG6	(see KL7)
SV	Greece (20)	VK9	Nauru (31)	WL7	(see KP4)
SV	Crete (20)	VK9	Norfolk Island (32)	WP4	(see KS6)
SV	Dodecanese Is. (20)	VK9	New Guinea Territory (28)	WS6	Mexico (6)
TA	Turkey (20)	VK9	Papua Territory (28)	XE, XF	Revilla Gigedo Is. (6)
TF	Iceland (40)	VK0	Heard Island (39)	XP	(see OX)
TG	Guatemala (7)	VK0	Macquarie Is. (30)	XT	Republic of Upper Volta (35)
TI	Costa Rica (7)	VK0	Australian bases in Antarctica (29) (30), (39)	XU	Cambodia (26)
TI9	Cocos Island (7)	VO1	Newfoundland (5)	XV	Vietnam (26)
TJ	Republic of Cameroon (36)	VO2	Labrador (2)	XW	Laos (26)
TL	Central African Republic (36)	VP1	British Honduras (7)	XZ	Burma (26)
TN	Congo Republic (36)	VP2	Anguilla (8)	YA	Afghanistan (21)
TR	Republic of Gabon (36)	VP2A	Antigua and Barbuda (8)	YB, YC, YD	Indonesia (28)
TT	Tchad Republic (36)	VP2D	Dominica (8)	YI	Iraq (21)
TU	Ivory Coast Republic (35)	VP2G	Grenada (8)	YJ	(see FU8)
TY	Republic of Dahomey (35)	VP2K	St. Kitts and Nevis (8)	YK	Syria (20)
TZ	Mali Republic (35)	VP2L	St. Lucia (8)	YN	Nicaragua (7)
U	U.S.S.R. (special stations)	VP2M	Montserrat (8)	YO	Roumania (20)
UA1 (UAIKAE)	U.S.S.R. bases in Antarctica (29), (38), (39)	VP2S	St. Vincent (8)	YS	El Salvador (7)
		VP2V	British Virgin Is. (8)	YU	Yugoslavia (15)
		VP5	Turks and Caicos Is. (8)	YV	Venezuela (9)
		VP7	Bahama Is. (8)	YV0	Aves Island (8)
		VP8	Falkland Is. (13)	ZA	Albania (15)
		VP8	South Georgia (13)	ZB2	Gibraltar (14)
		VP8	South Orkney Is. (13)	ZC4	British bases in Cyprus (see 5B) (20)
		VP8	South Sandwich Is. (13)		

Prefix	Country (Zone)	Prefix	Country (Zone)	Prefix	Country (Zone)
ZD3	Gambia (35)	3A	Monaco (14)	7Q	Malawi (37)
ZD5	Swaziland (38)	3V	Tunisia (33)	7X2	Algeria (33)
ZD7	St. Helena (36)	3Y	Bouvet Island (38)	7X0	French Sahara (33)
ZD8	Ascension Island (36)	3Y	Norwegian bases in Antarctica (38), (12) (39)	8J	Japanese bases in Antarctica (39)
ZD9	Tristan da Cunha and Gough Island (38)	4S	Ceylon (22)	8P	Barbados (8)
ZE	Rhodesia (38)	4U	United Nations bases	8R	Guyana (9)
ZF	Cayman Is. (8)	4W	Yemen (21)	8Z4	Iraq/Saudi Neutral Zone (21)
ZK1	Cook Is. (32)	4X, 4Z	Israel (20)	8Z5	Kuwait/Saudi Neutral Zone (21)
ZK1	Northern Cook Is. (32)	5A	Libya (34)	9A	San Marino (15)
ZK2	Niue (32)	5B	Cyprus (20)	9G	Ghana (35)
ZL	New Zealand (32)	5H	Tanzania (37)	9H	Malta (15)
ZL	Campbell Island (32)	5N	Nigeria (35)	9J	Zambia (36)
ZL	Chatham Is. (32)	5R	Malagasy Republic (39)	9K2	Kuwait (21)
ZL	Kermadec Is. (32)	5T	Republic of Mauritania (35)	9K3	(see 8Z5)
ZL5	New Zealand bases in Antarctica (30), (32)	5U	Republic of Niger (35)	9L	Sierra Leone (35)
ZM7	Tokelau Is. (31)	5V	Togoland (35)	9M2	Malaysia, W. (28)
ZP	Paraguay (11)	5W	Western Samoa (32)	9M6	Sabah (28)
ZS1, 2, 4, 5, 6	Republic of South Africa (38)	5X	Uganda (37)	9M8	Sarawak (28)
ZS (ZS2MI)	Price Edward and Marion Island (38)	5Z	Kenya (37)	9N	Nepal (22)
ZS---/ANT	South African bases in Antarctica (38)	6O	Somali Republic (37)	9Q	Republic of the Congo (36)
ZS3	S.W. Africa (38)	6W	Senegal Republic (35)	9U	Burundi (36)
ZS9	(see A2)	6Y	Jamaica (8)	9V	Singapore (28)
IM*	Minerva Reefs (32)	7G	Republic of Guinea (35)	9X	Rwanda (36)
IS*	Spratly Island and Reefs (28)	7O	South Yemen Republic (21), (37)	9Y	Trinidad and Tobago (9)
		7P	Lesotho (38)		

(NOTE: This List of Countries is solely for checking the location of Amateur Radio stations. It is thus a gazetteer and not a claims check. Prefixes marked with an asterisk are unofficial.)

The Zone areas, given in () after each country or prefix, can be located exactly from our "DX Zone Map." Another useful guide is the "Amateur Radio Map of the World" (Mercator projection).

ALPHABETICAL LIST OF COUNTRIES, ALSO SHOWING ZONES

(Current Prefixes — Corrected to September 1968)

Country	Prefix (Zone)	Country	Prefix (Zone)	Country	Prefix (Zone)
*Adelie Land (see Antarctica)		Bhutan	AC (22)	Denmark	OZ (14)
*Aden (see South Yemen Republic)		Blenheim Reef	VQ8 (39)	Desroches Island	VQ9 (39)
Afghanistan	YA (21)	Bolivia	CP (10)	*Desventurados Is. (see San Felix)	
Agalega Is. and Cargados Carajos	VQ8 (39)	*Bonaire (Netherlands Antilles)	PJ-B (9)	Dodecanese Is.	SV (20)
Aland Is.	OH0 (15)	Bonin and Volcano Is.	KA1 (27)	Dominica	VP2D (8)
Alaska	KL7, WL7 (1)	Botswana	A2, ZS9 (38)	Dominican Republic	HI (8)
Albania	ZA (15)	Bouvet Island	3Y (38)	Easter Island	CE0A (12)
Aldabra Is.	VQ9 (39)	Brazil	PY (11)	Ecuador	HC (10)
Algeria and French Sahara	7X2, 7X0 (33)	Brunei	VS5 (28)	*Egypt (see United Arab Republic)	
Amsterdam, and St. Paul Island	FB8 (FB8ZZ) (39)	Bulgaria	LZ (20)	*Eire (see Irish Republic)	
Andaman and Nicobar Is.	VU (26)	Burma	XZ (26)	*Ellice Is. (see Gilbert Is.)	
Andorra	PX (14)	Burundi	9U (36)	El Salvador	YS (7)
Angola	CR6 (36)	*Caicos Is. (see Turks Is.)		England	G (14)
Anguilla	VP2 (8)	Cambodia	XU (26)	Estonia	UR2 (15)
Antarctica (all the following bases count just as the one DXCC country, Antarctica)		Cameroon Republic	TJ (36)	Ethiopia	ET (37)
Argentine	LU-Z (13)	Campbell Island	ZL (32)	*Europa (Juan de Nova)	FR7 (39)
Australia (Davis, Mawson)	VK0 (39)	Canada (including Labrador and Newfoundland)	VE, VO (1), (2), (3), (4), (5)	Falkland Is.	VP8 (13)
Belgium	OR (38)	Canal Zone	KZ5 (7)	*Fanning Island (see Christmas Island)	
Chile	CE9 (13), (12)	Canary Is.	EA8 (33)	Faroe Is.	OY (14)
France (Adelie Land)	(FB8 YY) (30)	*Canton Island (see Amer. Phoenix Is.)		Farquhar Group	VQ9 (39)
Great Britain	VP8 (13), (12), (38)	Cape Verde Is.	CR4 (35)	Fernando de Noronha	PY (11)
Japan	8J (39)	*Capri (Italy)	IC (15)	Fiji Is.	VR2 (32)
New Zealand	ZL5 (30), (32)	*Cargados Carajos (see Agalega Is.)		Finland	OH (15)
Norway	3Y (38), (12), (39)	Caroline Is., Eastern	KC6 (27)	*Formosa (see Taiwan)	
South Africa	ZS---/ANT (38)	Caroline Is., Western	KC6 (27)	France	F (14)
U.S.A.	KC4 (KC4AAE, KC4USB.K) (12)	Cayman Is.	ZF (8)	Franz Josef Land	UA1 (UA1KED) (40)
U.S.S.R.	UA1 (UA1KAE) (29), (38), (39)	Central African Republic	TL (36)	French Guiana	FY7 (9)
Antigua and Barbuda	VP2A (8)	Ceuta and Melilla (Spanish Morocco)	EA9 (33)	French Oceania	FO8 (31), (32)
Argentina	LU (13)	Ceylon	4S (22)	French Territory of the AFARS and ISSAS	FL (37)
Armenia	UG6 (21)	Chagos Is.	VQ8 (39)	Gabon Republic	TR (36)
*Aruba (Netherlands Antilles)	PJ-A (9)	Channel Is. (excluding Jersey)	GC (14)	Galapagos Is.	HC8 (10)
Ascension Island	ZD8 (36)	Chatham Is.	ZL (32)	Gambia	ZD3 (35)
Australia and Tasmania	VK (29), (30)	Chile	CE (12)	Gangia	UF6 (21)
Austria	OE (15)	China	BY (23), (24)	Germany	DI, DJ, DK, DL, DM (14)
Aves Island	YV0 (8)	Christmas Island	VK9 (29)	Geyser Bank	VQ8 (39)
Azerbaijan	UD6 (21)	Christmas, and Fanning Island	VR3 (31)	Ghana	9G (35)
Azores Is.	CT2 (14)	Clipperton Island	FO8 (7)	Gibraltar	ZB2 (14)
Bahama Is.	VP7 (8)	Cocos Island	TI9 (7)	Gilbert and Ellice Is. and Ocean Island	VR1 (31)
Bahrein Is.	MP4B (21)	Cocos-Keeling Is.	VK9 (29)	Glorieuses Is.	FR7 (39)
Bajo Nuevo	HK0 (8)	Colombia	HK (9)	*Gough Island (see Tristan da Cunha)	
*Baker Island (Amer. Phoenix Is.)	KB6 (31)	Comoro Is.	FH8 (39)	Greece	SV (20)
Balearic Is.	EA6 (14)	Congo Republic	TN (36)	Greenland	OX, XP (40)
Barbados	8P (8)	Congo, Republic of the	9Q (36)	Grenada	VP2G (8)
*Bassas da India (Juan de Nova)	FR7 (39)	Cook Is.	ZK1 (32)	Guadeloupe	FG7 (8)
*Bear Island (see Svalbard)		Cook Is., Northern	ZK1 (32)	Guam	KG6, WG6 (27)
Belgium	ON (14)	Corsica	FC (15)	Guantanamo Bay	KG4 (8)
Bermuda	VP9 (5)	Costa Rica	TI (7)	Guatemala	TG (7)
		Crete	SV (20)	Guinea, Portuguese	CR3 (35)
		Crozet Is.	FB8 (FB8WW) (39)	Guinea, Republic of	7G (35)
		Cuba	CM, CO (8)	*Guinea, Spanish (see Rio Muni)	
		*Curacao (Netherlands Antilles)	PJ-C (9)	Guyana	8R (9)
		Cyprus	ZC4, 5B (20)	Haiti	HH (8)
		Czechoslovakia	OK, OL (15)	Hawaiian Is. (excluding Kure)	KH6 (31)
		Dahomey Republic	TY (35)	Heard Island	VK0 (39)
		*Das Island (Trucial Oman)	MP4D (21)	Honduras, British	VP1 (7)
				Honduras, Republic of	HR (7)
				Hong Kong	VS6 (24)
				*Howland Island (Amer. Phoenix Is.)	KB6 (31)
				Hungary	HA, HG (15)

Country	Prefix (Zone)	Country	Prefix (Zone)	Country	Prefix (Zone)
Iceland	TF (40)	*Manihiki Is. (see Northern Cook Is.)		Phoenix Is., British	VR1 (31)
Ifni	EA9 (33)	Marcus Island	KA1 (27)	Pitcairn	VR6 (32)
India	VU (22)	Mariana Is. (excluding Guam)	KG6 (27)	Poland	SP (15)
Indonesia	YB, YC, YD (28)	Marie Theresa	FO8 (32)	*Ponziane Is. (Italy)	IZ (15)
Iran	EP (21)	*Marion Island (see Prince Edward Island)		Portugal	CT1 (14)
Iraq	YI (21)	*Marquesas Is. (French Oceania)		Prince Edward, and Marion Island	ZS (ZS2MT), (38)
Iraq/Saudi Neutral Zone	8Z4 (21)			Puerto Rico	KP4, WP4 (8)
Ireland, Northern	GI (14)	Marshall Is.	FO8 (31)	Qatar	MP4Q (21)
Ireland, Republic of	EI (14)	Martinique	KX6 (31)	Reunion Island	FR7 (39)
*Ischia (Italy)	II (15)	Martinique	FM7 (8)	Revilla Gagedo Is.	XE, XF (6)
Isle of Man	GD (14)	Mauritania Republic	5T (35)	*Rhodesia (see Dodecanese Is.)	
Israel	4X, 4Z (20)	Mauritius	VQ8 (39)	Rhodesia	ZE (38)
Italy	I (15)	*Melilla (see Ceuta and Melilla)		*Rio de Oro (see Spanish Sahara)	
Ivory Coast Republic	TU (35)	Mexico	XE, XF (6)	Rio Muni and Fernando Poo (Spanish Guinea)	EAØ (36)
Jamaica	6Y (8)	Midway Is.	KM6 (31)	Rodriguez Island	VQ8 (39)
Jan Mayen	JX (40)	Minerva Reefs	1M (32)	Roumania	YO (20)
Japan	JA, JH, KA (25)	Moldavia	UO5 (16)	Rwanda	9X (36)
Jarvis Is. and Palmyra Group	KP6 (31)	Monaco	3A (14)	Ryukyu Is.	KR6, KR8 (25)
Jersey	GC (14)	Mongolia	JT (23)	*Saba (Sint Maarten)	PJ-S (8)
Johnston Island	KJ6 (31)	Montserrat	VP2M (8)	*Sabah (Malaysia, East)	9M6 (28)
Jordan	JY (20)	Morocco, Kingdom of	CN (33)	*Sahara, French (Algeria)	7XØ (33)
Juan de Nova, Europa, Bassas da India	FR7 (39)	*Morocco, Spanish (see Ceuta and Melilla)		Sahara, Spanish (Rio de Oro)	EA9 (33)
Juan Fernandez Archipelago	CEØZ (12)	Mozambique	CR7 (37)	*St. Brandon (see Agalega Is.)	
Kaliningradsk	UA2 (15)	*Mozambique Channel Islets (see Juan de Nova)		*St. Eustatius (Sint Maarten)	
*Kamaram (see South Yemen Republic)		Muscate and Oman, Sultanate of	MP4M (21)		
*Karelo-Finnish Republic (U.S.S.R. Europe)	UNI (16)	Nauru	VK9 (31)	St. Helena	PJ-E (8)
Kazakh	UL7 (17)	Navassa Island	KC4 (8)	St. Kitts, and Nevis	ZD7 (36)
Kenya	5Z (37)	Nepal	9N (22)	St. Lucia	VP2L (8)
Kerguelen Is.	FB8 (FB8XX) (39)	Netherlands	PA, PE, PI (14)	St. Martin	FS7 (8)
Kermadec Is.	ZL (32)	Netherlands Antilles, Windward (Aruba, Bonaire, Curacao)		St. Peter and St. Paul Rocks	PYØ (11)
Kirghiz	UM8 (17)			St. Pierre, and Miquelon	FP8 (5)
Korea	HL, HM (25)	*Netherlands Antilles, Leeward (see Sint Maarten)		St. Vincent	VP2S (8)
Kure Island	KH6 (31)	*Nevis (see St. Kitts)		*Salvador (see El Salvador)	
*Kuria Muria Is. (see Muscat and Oman)		New Caledonia	FK8 (32)	Samoa, American	KS6, WS6 (32)
Kuwait	9K2 (21)	*Newfoundland (Canada)	VO1 (5)	Samoa, Western	5W (32)
Kuwait/Saudi Neutral Zone	8Z5, 9K3 (21)	New Guinea Territory	VK9 (28)	San Andres, and Providencia	FKØ (7)
*Labrador (Canada)	VO2 (2)	New Hebrides	FU8, YJ (32)	San Felix and San Ambrosio	CEØX (12)
Laccadive Is.	YU (22)	New Zealand	ZL (32)	San Marino	MI, 9A (15)
Laos	XW (26)	Nicaragua	YN (7)	Sao Tome, and Principe	CR5 (36)
Latvia	UQ2 (15)	*Nicobar Is. (see Andaman Is.)		*Sarawak (Malaysia, East)	9M8 (28)
Lebanon	OD (20)	Nigeria	5N (35)	Sardinia	IS (15)
Lesotho	7P (38)	Niger Republic	5U (35)	Saudi Arabia	HZ (21)
Liberia	EL (35)	Niue	ZK2 (32)	Scotland	GM (14)
Libya	5A (34)	Norfolk Island	VK9 (32)	Senegal Republic	6W (35)
Liechtenstein	HBØ (14)	Norway	LA, LG, LH, LJ (14)	Serrana Bank and Roncador Cay	HKØ, KS4B (7)
*Lipari Is. (Italy)	IE (15)	*Ocean Island (see Gilbert Is.)		Seychelles	VQ9 (39)
Lithuania	UP2 (15)	*Okinawa (see Ryukyu Is.)		*Siam (see Thailand)	
Lord Howe Island	VK (30)	*Oman (see Muscat and Oman, also Trucial Oman)		*Sicily (Italy)	IT (15)
Luxembourg	LX (14)	Pakistan, East	AP (22)	Sierra Leone	9L (35)
Macao	CR9 (24)	Pakistan, West	AP (21)	Sikkim	AC3 (22)
Macquarie Is.	VKØ (30)	*Palau Is. (see W. Caroline Is.)		Singapore	9V (28)
*Madagascar (see Malagasy Republic)		*Palmyra Group (see Jarvis Is.)		Sint Maarten, Saba, St. Eustatius	PJ-M, PJ-S, PJ-E (8)
Madeira Is.	CT3 (33)	*Panama Canal Zone (see Canal Zone)		*Society Is. (See French Oceania)	
Malagasy Republic	5R (39)	Panama, Republic of	HP (7)	*Socorro Island (see Revilla Gagedo Is.)	
Malawi	7Q (37)	*Pantelleria (Italy)	IP (33)		
Malaysia, East (Sabah, Sarawak)	9M6, 9M8 (28)	Papua Territory	VK9 (28)	Solomon Is.	VR4 (28)
Malaysia, West	9M2 (28)	Paraguay	ZP (11)	*Somaliland, French (see French Territory of the AFARS and ISSAS)	
Maldives Is.	VS9M (22), (39)	*Pelagian Is. (Italy)	IL (33)	Somali Republic	6O (37)
Mali Republic	TZ (35)	Peru	OA (10)	South Africa, Republic of	ZS1, 2, 4, 5, 6 (38)
Malpelo Island	HKØ (9)	Philippine Is.	DU (27)		
Malta	9H (15)	Phoenix Is., American	KB6 (31)		

Country	Prefix (Zone)	Country	Prefix (Zone)	Country	Prefix (Zone)
South Georgia	VP8 (13)	*Tibet (China)	AC4 (23)	U.S.S.R. Europe	UA1, 3, 4, 6, 9 (16)
South Orkney Is.	VP8, LU-Z (13)	Timor, Portuguese	CR8 (28)		UN1
South Sandwich Is.	VP8, LU-Z (13)	Togo Republic	5V (35)		UV1, 3, 4, 6, 9
South Shetland Is.		Tokelau Is.	ZM7 (31)		UW1, 3, 4, 6, 9
	VP8, CE9, LU-Z (13)	Tonga	VR5 (32)	U.S.S.R. Asia	
South-West Africa	ZS3 (38)	Trindade, and Martin Vaz Is.	PY0 (11)		UA9, UA0 (17), (19), (23)
South Yemen Republic		Trinidad and Tobago	9Y (9)		UV9, UV0
	7O (21), (37)	Tristan da Cunha, and Gough Island	ZD9 (38)		UW9, UW0, UZ0
Spain	EA (14)	Tromelin	FR7 (39)	Uzbek	U18 (17)
*Spitzbergen (see Svalbard)		Trucial Oman	MP4T, MP4D (21)	Vatican	HV (15)
Spratly Island and Reefs	1S (28)	Tunisia	3V (33)	Venezuela	YV (9)
Sudan	ST (34)	Turkey	TA (20)	Vietnam	XV (26)
Surinam	PZ (9)	Turkoman	UH8 (17)	Virgin Is., British	VP2V (8)
Svalbard (Spitzbergen and Bear Island)	JW (40)	Turks and Caicos Is.	VP5 (8)	Virgin Is., U.S.A.	KV4 (8)
Swan Is.	KS4 (7)	Uganda	5X (37)	*Volcano Is. (see Bonin Is.)	
Swaziland	ZD5 (38)	Ukraine	UB5, UT5, UY5 (16)	Wake Island	KW6 (31)
Sweden	SM, SK, SL (14)	United Arab Republic (Egypt)	SU (34)	Wales	GW (14)
Switzerland	HB (14)	United Nations (Geneva Hq. only)	4U (14)	Wallis and Futuna Is.	FW8 (32)
Syria	YK (20)	Upper Volta Republic	XT (35)	White Russia	UC2 (16)
Tadzhik	UJ8 (17)	Uruguay	CX (13)	Willis Is.	VK (30)
*Tahiti (see French Oceania)		U.S.A.	K, W, WA, WB, WF, WN, WV (3), (4), (5)	Yemen	4W (21)
Taiwan	BV (24)			Yugoslavia	YU (15)
Tanzania	5H (37)			Zambia	9J (36)
*Tasmania (Australia)	VK7 (30)				
Tchad Republic	TT (36)				
Thailand	HS (26)				

(NOTE: All Countries listed here count separately for the DXCC Award, with the exception of those marked with an asterisk. These score the same as the DXCC country given in brackets.)

COMPLETE LIST OF INTERNATIONAL NUMERICAL PREFIXES

(Likely to be used by Expedition and Special-Activity Stations)

Prefix	Country	Prefix	Country	Prefix	Country
2A-2Z	United Kingdom	5J-5K	Colombia	7S	Sweden
3A	Monaco	5L-5M	Liberia	7T-7Y	Algeria
3B-3F	Canada	5N-5O	Nigeria	7Z	Saudi Arabia
3G	Chile	5P-5Q	Denmark	8A-8I	Indonesia
3H-3U	China	5R-5S	Malagasy Republic	8J-8N	Japan
3V	Tunisia	5T	Mauritania Republic	8O	Botswana
3W	Vietnam	5U	Niger Republic	8P	Barbados
3X	Guinea, Republic of	5V	Togo Republic	8Q	Maldives Is.
3Y	Norway	5W	Samoa, Western	8R	Guyana
3Z	Poland	5X	Uganda	8S	Sweden
4A-4C	Mexico	5Y-5Z	Kenya	8T-8Y	India
4D-4I	Philippine Is.	6A-6B	United Arab Republic	8Z	Saudi Arabia
4J-4L	U.S.S.R.	6C	Syria	9A	San Marino
4M	Venezuela	6D-6J	Mexico	9B-9D	Iran
4N-4O	Yugoslavia	6K-6N	Korea	9E-9F	Ethiopia
4P-4S	Ceylon	6O	Somali Republic	9G	Ghana
4T	Peru	6P-6S	Pakistan	9H	Malta
4U	United Nations	6T-6U	Sudan	9I-9J	Zambia
4V	Haiti	6V-6W	Senegal Republic	9K	Kuwait
4W	Yemen	6X	Malagasy Republic	9L	Sierra Leone
4X	Israel	6Y	Jamaica	9M	Malaysia
4Y	International Civil Aviation Organization	6Z	Liberia	9N	Nepal
4Z	Israel	7A-7I	Indonesia	9O-9T	Congo, Republic of the
5A	Libya	7J-7N	Japan	9U	Burundi
5B	Cyprus	7O	South Yemen Republic	9V	Singapore
5C-5G	Morocco, Kingdom of	7P	Lesotho	9W	Malaysia
5H-5I	Tanzania	7Q	Malawi	9X	Rwanda
		7R	Algeria	9Y-9Z	Trinidad and Tobago

SIMPLIFYING SOME CALCULATIONS

THE EASY APPROACH

E. JOHNSON (G2HR)

WHY do the pundits blind us with science when so often a simple answer is all we require? The writer frequently hears alarm expressed on the bands where, for example, a standing-wave ratio of 1:1 cannot be achieved.

Admittedly a high SWR can cause dielectric breakdown and ohmic loss at the respective voltage and current loops but this apart, we are more concerned with radiating the maximum power generated by the final stage, and ultimately what it means to the signal at the other end.

SWR Meters

A common form of SWR meter has an arbitrary scale, and from the forward and backward readings one calculates the standing-wave ratio and the reflection coefficient, *K*. The two basic formulæ are as follows:—

$$(a) \text{ SWR} = \frac{I_f + I_r}{I_f - I_r}$$

$$(b) K = \frac{\text{SWR} - 1}{\text{SWR} + 1}$$

where *I_f* = forward current, *I_r* = backward current,
K = reflection coefficient.

It is customary to install the SWR meter between the *pi*-section output and the ATU. If a low-pass filter is used to combat TVI, then it is important to aim for a low SWR ratio, as with the usual 80-ohm load into which most transmitters are designed to work, the filter must "see" this value on the input and output sides in order to achieve the attenuation curve for which it is designed.

Formula Simplification

What we also want to know, however, is what our true power output is, and what it means to the signal at the other end if the SWR is not 1:1.

In formula (b) above, SWR may be replaced by the right-hand side of formula (a). This will give us the complex fraction:

$$K = \frac{\frac{I_f - I_r}{I_f + I_r} - 1}{\frac{I_f - I_r}{I_f + I_r} + 1}$$

$$\text{This simplifies to } K = \frac{I_r}{I_f}$$

This, however, indicates reflected voltage or current. As we are interested in *power*, the final

formula becomes $K^2 = \left(\frac{I_r}{I_f}\right)^2$. Deduct this from

the power output of your final, and you have the true power delivered to the ATU. As this is what we really want to know, is this not simpler than working out your SWR first, unless you really are interested in this? The dB loss can then easily be calculated by evaluating 10 log. of the ratio of power output, and power actually delivered to the ATU. The latter is, of course, power output minus the reflected component. It is doubtful whether an untrained ear can detect much under a 2 dB loss, anyway, so don't lose too much sleep if you cannot achieve that sacred 1:1 ratio.

As an example, an SWR of 4:1 means a reflected power coefficient of 0.36. In other words, 100 watts output will deliver 64 watts to the load. This is a loss of less than 2 dB.

MORE COURSES FOR THE R.A.E.

Further to the listings on pp.442-443 of the September issue of SHORT WAVE MAGAZINE, we have since been notified of the following:

Brighton: At the Technical College, two evenings a week. Apply immediately, Richmond Terrace, Room G.9, or ring Brighton 66544 for appointment.

Glasgow: At Allan Glen's School, Cathedral Street, on Mondays and Thursdays, 7.30-9.30 p.m. This course has already started, under the direction of GM3AXX, and the inclusive fees is 20s.

Grantham: At the College of Further Education. Course has already started, Monday evenings 6.45 to 8.45 p.m., with E. J. Pestell, G3BPP, as tutor.

London (Islington): At the De Bevoir GLC Evening Institute, Tottenham Road, Balls Pond Road, N.1, on Mondays, Wednesdays and Fridays, 7.30-9.30 p.m., as booster for the R.A.E. Course, under the direction of F. J. Barns, G3AGP.

Mexborough: At Schofield Technical College, Park Road, on Wednesdays 6.30-9.30 p.m., with G3UQA on the air. Apply immediately, at the College.

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G3WHQ, J. M. Kelly, Marshwick, St. Marys Gardens, Hilperton, Trowbridge, Wilts. (Tel. *Trowbridge 4451*.)

G3XGB, M. R. Brooks, 4 The Poynings, Iver, Bucks. (Tel. *Iver 1258*.)

G3XIR, I. B. Deane, 66 Poplar Drive, Blurton, Stoke-on-Trent, Staffs. (Tel. *0782-35149*.)

G3XJM, G. Sawdy, 7 Beech Grove, Guildford, Surrey.

G3XNX, D. C. Chivers, Seascape, Parkham Road, Brixham, S. Devon. (Tel. *Brixham 4504*.)

G3XOK, R. Kearney, 134 Larkshall Road, Chingford, London, E.4.

G3XPI, B. Hallows, 3 Southdown Close, Rochdale, Lancs.

G3XPR, I. M. Bassett-Smith, 185 London Road, Cheltenham, Glos. (Tel. *Cheltenham 23667*.)

G3XQT, F. G. Holt, 77 Kent Road, Woods Estate, Wednesbury, Staffs.

G3XQW, R. L. Hoare, 160 Eastcombe Avenue, Charlton, London, S.E.7.

G1XRB, K. A. R. Robson, 195 Lower Braniel Road, Belfast. BT5 7NP. (Tel. *Belfast 58164*.)

G3RRX, E. H. C. Bone, 58 Dunvegan Road, Eltham, London, S.E.9.

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G3XSK, K. H. Dawson, 28 Springfield Gardens, Lowestoft, Suffolk.

G8BKZ, R. Thomas, 27 Moorland Road, Bridgwater, Somerset.

G8BOP, M. J. Palmer, 109 Longfellow Road, The Straits, Lower Gornal, Dudley, Worcs.

G8BOR, P. Routledge, 5 Chilton Close, Bridgwater, Somerset.

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G8BSK, P. G. Robins, 4 West Road, Woolston, Southampton.

G8BTA, M. R. Smith, 11 Finchfield Hill, Wolverhampton, Staffs.

GW8BTD, P. Sladen, 44 Burnt Barn Road, Bulwark, Chepstow, Mon. NP6 5NG.

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G8BUF, M. J. Higgins, 55 Beech Hall Road, Highams Park, London, E.4.

G8BUL, R. L. Lock, 9 Forest Road, Woodford Green, Essex.

G8BUN, J. R. Brown, Greygarth, Raikes Lane, Bradford 4, Yorkshire.

G8BUO, R. Bean, 6 Goldingham Avenue, Loughton, Essex.

G8BUN, Mrs. C. A. Chapman, 64 Heath Road, Holtspur, Beaconsfield, Bucks. (Tel. *Beaconsfield 3109*.)

G8BUX, K. Buxcey, 33 Moor End Road, Mellor, Stockport, Cheshire. (Tel. *061-427 1811*.)

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G3EVT, R. J. Mutton, Summerhayes, Mill Lane, Oversley Green, Alcester, Warks. (Tel. *Alcester 2041*.)

G3EYD, E. J. Green, 81 Norris Road, Sale, Cheshire.

G3FBP, G. A. Perrins, 49-A Fountain Drive, Roberttown, Liversedge, Yorkshire.

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G3HEA, J. U. Burke, West Quintain, Speldhurst Road, Langton Green, Tunbridge Wells, Kent. (Tel. *Langton 2482*.)

G3IJB, W. J. Barker, Greywell House, Chart Lane South, Blackbrook, Dorking, Surrey.

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G3NUG, E. N. Cheadle, 27 London Road, Shenley, St. Albans, Herts.

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G3OVA, J. J. Lockyer, 15 Kelvin Close, Ferndale Estate, Kidderminster, Worcs.

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G3RFA, D. E. Garrinton, 86 Shetland Way, Urmston, Manchester, Lancs.

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GW3SVY, D. Scourfield, Llwyn Celyn, Bancyfelin, Carmarthen.

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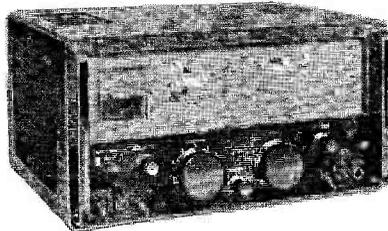
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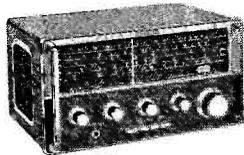
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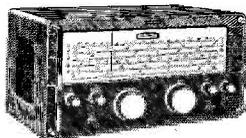
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Sell Eddystone 840C, or EXCHANGE EB-35 with cash adjustment. Offers?—Dr. Dunn, Leavesden Hospital, Abbots Langley, Herts. (Tel. Garston 72152 or 72222).

FOR SALE: Lafayette communications receiver KT-320, with manual, price £28. Also ex-WD beam rotator, with remote indicator, £10 or near offer.—Grove, 14 Sterling Avenue, Edgware, Middlesex. (Tel. 01-958 5434).

OFFERING: A superb R.216 receiver, covering 19 to 165 mc, in brand new condition, with matching PSU and complete with all connecting cables. Sensible offers only, please, and best secures. Carriage extra.—Hayward, Sunnyfields, Lighthouse Road, St. Margaret's Bay, Nr. Dover, Kent.

BARGAIN! A K.W. Viceroy Mk. IIB, complete with extra half-lattice filter and K.W. PSU, no modifications and in really tip-top condition. Gift at £75.—Dedman, G2NH, 75 Woodlands Avenue, New Malden, Surrey. (Tel. 01-942 7246.)

FOR SALE: American Heath SB-300E receiver, filters for AM/CW/SSB, condition as new, will deliver or you collect.—Ring Mitchell, G2AMG, Great Chatwell 276 (Shropshire), for price.

SALE: CR-100 receiver, in good working order, £15 or near offer. Also quantity components and copies "Short Wave Magazine" for free.—Rowell, 21 St. Peter's Road, Harborne, Birmingham 17. (Tel. 021-427 2320).

FOR SALE: Eddystone EB-35 receiver, in as-new condition, price £45.—Saxby, Studio 59, 59 Shaftesbury Avenue, London, W.1. (Ring 01-437 3141, day, or 01-723 6455, evenings.)

SALE: Compact VHF Rx, tunable over 60 to 180 mc, with unique signal on-off indication, complete with internal mains PSU and speaker, bargain at only £25. Signal generator/wavemeter, tunable 140 to 260 mc, complete with xtal, connecting leads and instruction manual with circuitry, £10. Marconi valve voltmeter, with probe, circuit and internal mains PSU, measures AC/DC volts in five ranges 0-300v., usable up to 200 mc, £20. Brand new VHF signal generator, tunable 100 to 125 mc, with xtal, output meter, all leads and aerial, £10. Carriage extra. Please include s.a.e. with enquiries.—Hayward, Sunnyfields, Lighthouse Road, St. Margaret's Bay, Nr. Dover, Kent.

FOR Disposal: Equipment of the late G2CZM, Chesham, Bucks. Transmitters, receivers, converters and antenna systems covering 160 metres to 70 centimetres. Includes fixed-station and portable gear, also test equipment and components. Many items brand new and in makers' cartons. Everything on offer. Send s.a.e. for detailed list.—Rickett, G3PV, 29 North Road, Berkhamsted (3622), Herts.

SELLING: Heathkit RA-1 amateur band receiver, with Codar PR-30X preselector, price £32 10s., buyer responsible for transport.—Poulter, G3WHK, 279 Aragon Road, Morden, Surrey.

WANTED: Hallcrafters SX-42 in good condition; and SX-28, could be incomplete or not working. Also Hallcrafters-made U.S. Army Signal Corps receiver Type R.274/FRR in any condition. Will collect. Ring or write.—Wise, 64B Beach Road, Newton, Porthcawl (2276), Glam., South Wales.

SALE: Codar T.28 Rx, £11. Codar 12v. PSU, £8. Shure 22 microphone, £3. Hansen 75-ohm SWR bridge, 40s. All items as new.—Hamer, 7 Arundel Road, Cheylesmore, Coventry, Warks.

SMALL ADVERTISEMENTS, READERS—continued

WANTED: Tunable converter 21 and 28 mc. Selling a Geloso VFO at £4. (Lancs).—Box No. 4696, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

WANTED: Withers solid-state VFO for two meters, in good condition. Selling: Minimitter MR-37 receiver, in good order, with manuals, price £15, details on request.—Stevenson, 19 Johnstone Road, Newent, Glos.

FOR SALE: K.W. Vespa Mk. II, in as-new condition, price £110 or near offer.—Wilson, 247 Gosport Road, Fareham (6018), Hants.

STATION of The Late G3CZT, East Grinstead: Includes Heathkit DX-100U with T/R switch; CR-100 receiver; home-built Z-match; BC-221, recalibrated; 4/4 beam for two metres; Eddystone bug key; RSGB and ARRL (1967) "Handbooks". Offers and enquiries with s.a.e., buyers to collect.—Lord, G3DSK, QTHR, or ring East Grinstead 25149.

FOR SALE: Bush TV-56 Rx for TV/DX, perfect and unconverted, with circuit, £10. Marconi Type TF-643B Wavemeter, coverage 20 to 300 mc, perfect condition, £10. Valve voltmeter Type TF-428B, £5. Panoramic receiver Type IP-69A/ALA2, 30 mc, £15. Two Solatron Type AS.517 stabilised PSU's, 300v., with handbooks, £7 each. **WANTED:** Cradle-type valveholders for EC53 valve.—Hardman, 24 Mill Drive, Henfield, Sussex. (Tel. Henfield 2609, after 6.0 p.m.)

SALE: Marconi R.1475 receiver, coverage 2.0 to 20 mc, ideal for beginner, in good working order, including speaker, headphones and all connecting leads, price £15, including carriage. (Surrey).—Box No. 4698, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

OFFERING about £15 for a CR-100 receiver in good condition. Preferably in London area, as buyer would collect.—Ring Hopkins, 01-907 4676.

SELLING: R.1475 receiver, needs some attention, £5. BC-906 wavemeter, coverage 145 to 230 mc, 20s. Two 2N3632 transistors, unused, each capable 14w. on two metres, with data, the pair £9. Hudson AM.108 mobile rig, partly modified for two metres, with circuit, £10. Two-metre Tx. QV03-10 PA, less modulator and PSU, well built in 9in. by 5in. by 5in. cabinet, with meter. £10. BC-625A, with QQV03-20A, QQV06-40 valves, 50s. Ten-element aerial for 70 centimetres, 30s.—Whitlock, 43 Ebbens Road, Femel Hempstead, Herts.

SALE: Eddystone EA-12 receiver, very little used and as new. Price £125, would prefer buyer to inspect and collect.—Rowell, G5RL, 14 Market Hill, St. Ives (3183), Huntingdonshire.

OFFERING: R.C.A. AR88 receiver, in excellent condition, will deliver 50 miles.—Lord, G3PHN, Moira, Burton-on-Trent, Staffs. (Tel. Swadincote 7537.)

SALE: Eddystone S.640 receiver with built-in speaker. Looks good and works well, price £16, buyer to collect Maidenhead.—Box No. 4699, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

SALE: Precision Wavemeter W.1191A, complete with crystal and calibration charts, 200 kc to 20 mc, £10. Brand new Marconi VHF sig. gen. Type 6, £10. Waveform pulse generator Type 51 with PSU, £10. Audio amplifier with PSU, £4. Marconi RF/AF signal generator with PSU, £10. PSU Type 234, £5. VHF Rx R.1933A, tunable 60-80 mc, FM/AM, brand new, £10. VHF front end, tunable 180 to 250 mc, £5. Carriage extra, s.a.e. with enquiries.—Hayward, Sunnyfields, Lighthouse Road, St. Margaret's Bay, Nr. Dover, Kent.

SALE: Pair of bases for 4CX250B, 50s. each. Pair 4CX250B valves, used but OK, 50s. each. New p.t.f.e. bases for QQV06-40, etc., 5s. each.—Box No. 4672, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

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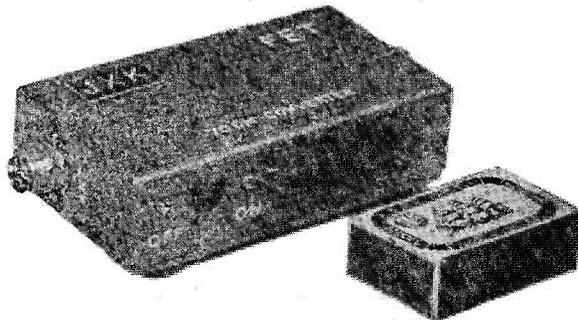
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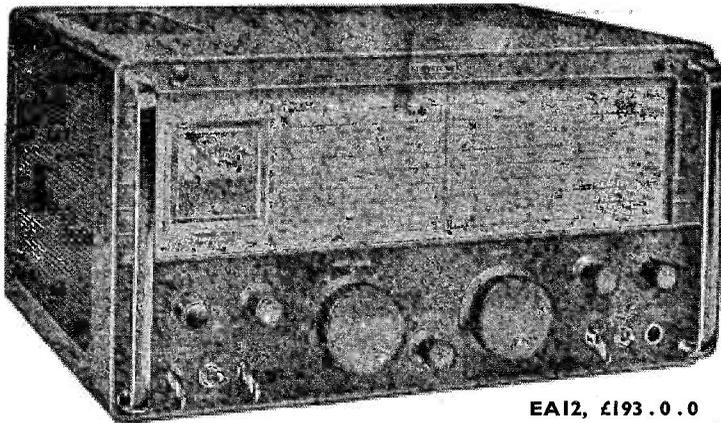
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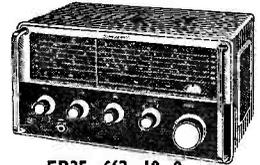
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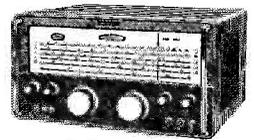


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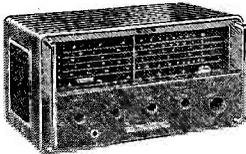
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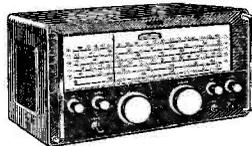
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SMALL ADVERTISEMENTS, READERS—continued

FOR SALE: National HRO, nine GC coil packs, with hefty PSU, speaker and repainted hammer-finish, price £20. Also Lorenze LO-15 page-printer, recently overhauled, in excellent condition and with some spares, £25. Wavemeter W.1191A, in original transit case, in good condition, with correct charts and spare valves, £8. RTTY Terminal Unit, Audio ATM AP/FAE, in good condition, £17. All this equipment with circuits and information, £65 for The Lot. Demonstrations a pleasure. Buyer inspects and collects. And I WANT, with no mods., a Hallicrafters SX-28, SX-32 Skyrider or similar, up to £25 suggested. (On holiday till Oct. 13.).—Wickstead, 11 Norman Road, Ilford, Essex. (Tel. 01-478 5057.)

SALE: Correspondence Course for the R.A.E., with questions and answers, also beginner's Morse and test records, price £7.—Haslam, 49 Tyzack Road, Woodseats, Sheffield S8-0GL, Yorkshire.

WANTED: Small Oscilloscope, and Z-match unit. **For SALE:** A mint R.C.A. AR88D with speaker, headphones and manual, price £40; would assist with delivery. BC-453 six-volt, unpowered, 60s. Mains Class-D Wavemeter, 60s. Buyers to collect.—Muller, G3VYP, 423 Chester Road, Castle Bromwich, Birmingham 36. (Tel. 021-747 2358.)

SELLING: BC-453, £4. BC-455, 40s. S.440B, 70 mc or 144 mc transmitter, with circuit, 60s. Pye Ranger, for 144 mc, £8. Philpotts cabinet and chassis for G2DAF-type Mk. II Tx, new, £4. Pair of power selsyns, £5. Unit RF26/27, 20s. T.W. two-metre Halo, 40s. W/S 19 Mk. III vibrator and rotary PSU, 30s. National HRO 6-volt Vibrator Pack, 30s. R.C.A. AR88 6-volt vibrator pack, 30s. Buyers to collect, or carriage extra.—Biltcliffe, G5HB, Longlands, Steeple Morden (315), Nr. Royston, Herts.

WANTED: To buy or borrow, copies "Short Wave Magazine," April 1960, December 1961, June 1965, August 1967. Am trying to do up a CR-100.—Lindars, 52 Heathcote Drive, East Grinstead, Sussex.

WANTED: For Cash Purchase, KW-2000A in mint condition, with its mains PSU. Also wanting to buy a good hi-fi stereo preamp/amplifier. Have for SALE a near-perfect BC-221, at £17 10s., and an Osram FM tuner, 60s.—Dale, G3PZF, QTHR Orpington. (Tel. Farnborough 54512.)

FOR Immediate Disposal, all items in condition and appearance absolutely as new: Sommerkamp FL-200B, £125. Sommerkamp FL-1000, £80. SWR bridge with remote indicator, £4. Quality American mechanical bug key, £4. Foster Hi-Z dynamic microphone, with heavy telescopic desk stand, £7. Acos xtal microphone, with desk stand, 40s. Heathkit valve voltmeter V-7AU, factory wired, £14. Heathkit signal generator RF-1U, £14. Heathkit GD-1U, factory wired, £12. Large and excellent collection of hand tools, small electronic equipment, large and small variable condensers, inductors, roller-coaster, etc., etc. All items, purchasers to collect or arrange transport.—J. Arthur, 11 Strand, Barnstaple, North Devon. (Tel. Barnstaple 3026/7, or 9271 3026.)

WANTED: Twenty-metre bandsread coil pack for HRO.—Bryan, 8 Leighton Road, Manchester, 16.

WANTED: Eddystone 888A receiver.—North, G8IO, Grafton Manor, Grafton Lane, Bromsgrove (2151), Worcs.

MUST Clear: AC128's, 6d.; BY-100's, 2s. 6d. Diodes at 2d., 3d. and 4d. Selection of semiconductors, 2s.; all guaranteed working. For all these, and more, send s.a.e. for price list.—Knights, 34 Greenways, Stopsley, Luton, Beds.

SMALL ADVERTISEMENTS, READERS—continued

NOVEMBER Issue appears Friday, October 25. Single-copy orders should reach us by Wednesday, 23rd. If you want "1st class" posting, please include 3d. extra (total 4s. 3d.). We will despatch on Thursday, 24th, but we are in the hands of G.P.O. as regards delivery.—Circulation Dept., Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

SELLING: Trio 9R-59 Rx, little used, with stereo headphones; de-Luxe Joystick with Type 3A ATU, with 100ft. feeder; also variable-voltage rotary transformer, rated 0-260v. AC at 2.5A. Price £35.—Tarver, 26 Brewer Road, Bulkington, Nr. Nuneaton, Warks.

FOR SALE: B2 Tx/Rx, with PSU, complete station, FB, £10. Geloso VFO, new, £4. Quality Jap 35mm. camera, £15. High-power binoculars, £9. Premier drums and quality cymbals, like new, £59. Vox amplifier and Hofner thin guitar, £39. Conn alto saxophone, gold finish, £33. Small Pye car radio, requires attention, 30s. Garrard gram-deck and radio amplifier, 50s. Also transformers, valves, condensers, meters, etc. cheap. Consider EXCHANGES: interested small receiver or Transceiver.—Walters, G3MKO, 14 Wood End Road, Erdington, Birmingham, 24. (Tel. 021-373 0225.)

SALE: Heathkit DX-40U, one year old, £20. R.209 Rx, coverage 1.0 to 20 mc, 6v. version, £9. Phillips tape recorder, Model EL3552, with microphone and tapes, £15.—Houghton, G3VZM, QTHR.

SELLING: Complete outfit. Trio 9R-59 communications receiver, Codar PR-30X preselector, Joystick aerial and Joymatch, with headphones, etc., superb performance on all bands. Outstanding value at £27, or near offer.—Kyle, 59 Bathurst Walk, Iver, Bucks. (Tel. Iver 963, evenings; Staines 55281, office hours.)

SALE: K.W. Vanguard, Mk. I, at £25. Also home-built converter, QP-166 front-end and Eddystone dial, with built in PSU, £13.—Baker, G3SPX, QTHR (Yorkshire).

SELLING: KW-600 Linear Amplifier, as new, £85. OS-88U 3in. Oscilloscope, in mint condition, very compact and with carrying case, £20. Multimeter, brand new, 50s.—Barry, 15 Fairlawn Court, Acton Lane, London, W.4.

SELLING: Ten-watt Transceiver for 80/160m., incorporates RF-FC-2/IF receiver, PSU and speaker, push-pull modulator, in metal case, £10. National NCX-3 transceiver, with maker's AC/PSU, capable 200w. p.e.p. SSB, 200w. CW and 100w. AM, price £100.—Rayer, G3OGR, Reddings, Longdon Heath, Upton-on-Severn (2244), Wores.

FOR SALE: Sommerkamp FL-200B transmitter, in very good condition, £105 or near offer. (Yorkshire).—Box No. 4702, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

FOR SALE: Heathkit SB-300E, £124. SB-400/401E, £149. SB-600, £9. Rotor TR-44, plus control cable, £32. Mosley TA-33Jr. beam (U.S., 1 kW), with coax cable, £33. Linear amplifier, 1 kW, £39. El-bug, Eldico (U.S.A.), £11. Amateur desk, plus maps, etc., 60s. Reduced price for sale "en bloc"—best offer wins.—Geng, G5ACX, 77 Kelvinbrook, West Molesey, Surrey.

WANTED: Receivers Eddystone 830/7, EA-12, 940, Hallicrafters SX-100/2, or similar, for cash.—Dean, Cawsand, Westhill Road, Ryde, Isle of Wight.

FOR SALE: Geloso VFO Model 104/4, less dial, £5. HRO coil packs, 10 to 160 metres, 40s. Plus postage.—Gosling, G3FYV, 79 Toothill Road, Loughborough (3938), Leics.

BARGAIN: Brand new B.40A receiver, purchased recently from well-known dealer at cost of £35, with new instruction manual, at £22 or near offer.—Davidson, 19 Cavendish Avenue, London, N.3. (Tel. 01-346 4353.)

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Sommerkamp FT-DX 500 transceiver, 80-10 metres	250	0	0

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Swan 350 SSB transceiver, 80-10 metres	216	0	0
Swan 230-XC power supply (to suit 500 or 350)	49	0	0
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Hallicrafters Equipment:	£	s.	d.
SX-130 Communications receiver	86	15	0
SX-122 Communications receiver	148	5	0
SX-146 SSB receiver, 80-10 metres	137	5	0
HT-46 SSB transmitter, 80-10 metres	192	5	0
HA-1 electronic keyer	42	15	0

Eddystone Radio Ltd.:	£	s.	d.
Eddystone EA12 Amateur bands receiver, 160-10 metres	193	0	0
Eddystone 940 Communications receiver	143	0	0
Eddystone 840C Communications receiver	70	0	0
Eddystone EC10 receiver	53	0	0
Eddystone EB35 receiver	62	10	0
Eddystone EB36 receiver	56	5	0

Trio Communications Receivers:	£	s.	d.
Trio JR-60 14 tubes amateur communications receiver, 540 kc/s-30 mc/s., plus 142-148 mc/s.	61	19	0
Trio 9R59 9 tube communications receiver	34	13	0
Trio 9R59DE 9 tube communications receiver	39	15	0
Trio JR500SE Amateur bands receiver, 80-10m.	68	0	0
Trio TS-500 SSB transceiver complete with a.c. P.S.U. and split frequency V.F.O., 80-10m, 200 watts PEP	231	0	0

Lafayette Communications Receivers:	£	s.	d.
HA-500 Amateur bands receiver, 80-6 metres	44	2	0
HA-700 Communications receiver (with product detector)	37	16	0
HA-350 Amateur bands receiver, 80-10 metres	67	10	0

K.W. Electronics Ltd.:	£	s.	d.
K.W. 201 Amateur bands receiver, 160m.-10m.	111	0	0
K.W. Vespa Mk. II transmitter (with P.S.U.)	135	0	0
K.W. 2000A SSB transceiver, 160m.-10m. (with P.S.U.)	232	0	0

Mosley Electronics (Beams):	£	s.	d.
TA-33Jr. Triband three element beam	27	5	0
TA-32Jr. Triband two element beam	19	0	0
TA-31Jr. Triband dipole	11	11	0
V-3Jr. Triband vertical	8	5	0
TD-3Jr. Wire-trap dipole	6	15	0
Channelmaster rotators	13	13	0
Channelmaster rotators (automatic)	18	18	0

Park-Air Electronics Ltd.:	£	s.	d.
2 metre transmitter (complete with mic, etc.)	80	0	0
Jet Set Aircraft receiver	12	0	0
Sky Bandit Aircraft receiver	21	0	0
Kurer Aircraft, short, medium, and long wave receiver	42	15	3

Swanco/CSE Equipment:	£	s.	d.
Swanco/CSE 2A10 solid state transmitter	43	7	0
Swanco/CSE 2AR solid state receiver	44	0	0
Swanco/CSE type II A.T.M.A. mobile/fixd/portable antenna	9	15	0

Swanco/CSE safety mobile microphone, Type MM2	2	17	11
Swanco SP.144 2 metre converter	10	10	0
Swanco 100 kc/s. calibrator	5	17	6
Halson Mobile antenna, now all weather, all bands system	6	19	6
Extra coils (when more than one band is required)	3	17	6
Swanco Quad Spiders (per pair)	6	10	0

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Echelford B1/4 transmitter for 4 metres	30	0	0
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R.6.10	6	15	0	12/MS P.S.U.	11	5	0
R.6.10X	8	8	0	12/RC control	2	7	6
CC.40	6	10	0	T2 receiver	15	10	0
CR.45K	9	10	0	Mini-Clipper	1	19	6

Partridge Electronics:	£	s.	d.	Shure Microphones:	£	s.	d.
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Type 3 tuner	2	15	0	Shure 444	10	12	6
Type 3A tuner	3	12	0	Shure 401A	5	10	0
Type 4 tuner	6	6	0	Shure 2755K	4	2	6

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600M Amplifiers. 19" rack mounted. Mains supply, £3.
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Transistors, A.F. and R.F. 3/9 dozen, post paid.
New Ferrite Pot Cores. 1/6 each or 15/- dozen, post paid.
Transistorized Morse Oscillator Modules. Will drive speaker or phones, 18/9, post paid.
QW03 1/2 or 10, 15/-, post paid.
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Tank Aerials. Three 4" sections making 12", 8/6. P. & P. 5/- any number Bases, 4/6. P. & P. 2/-.
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Creed 7B Teleprinters. Used, £15. P. & P. 30/-.
Creed 7B Teleprinters. As new, £30. P. & P. 30/-.
All spare parts for Creed 7B Teleprinters in stock.
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SPECIAL OFFER OF MIKES. D x 73 Pizo Dynamic, 32/6, post paid.
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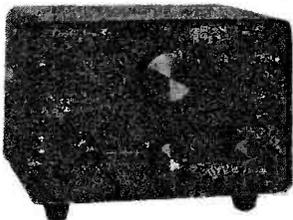
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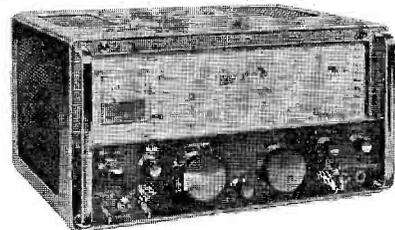
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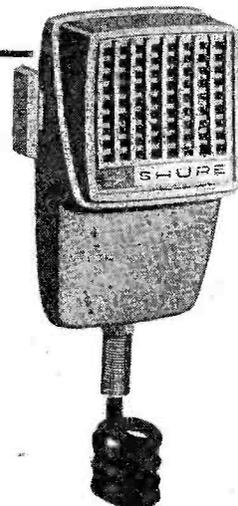
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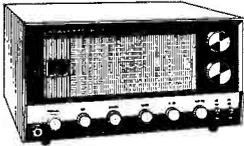
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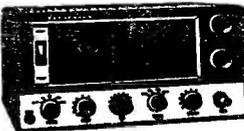
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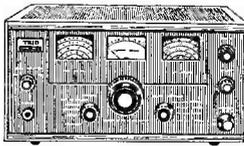
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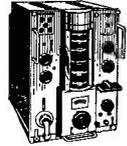
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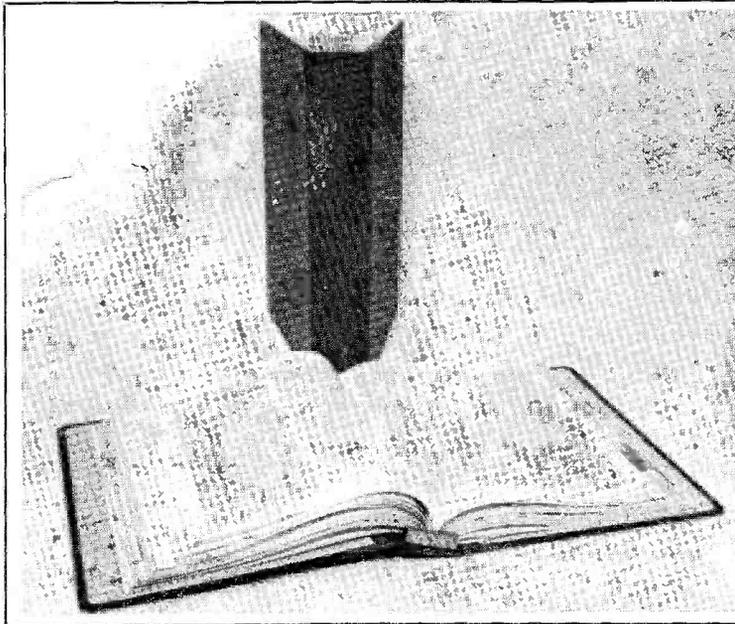
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